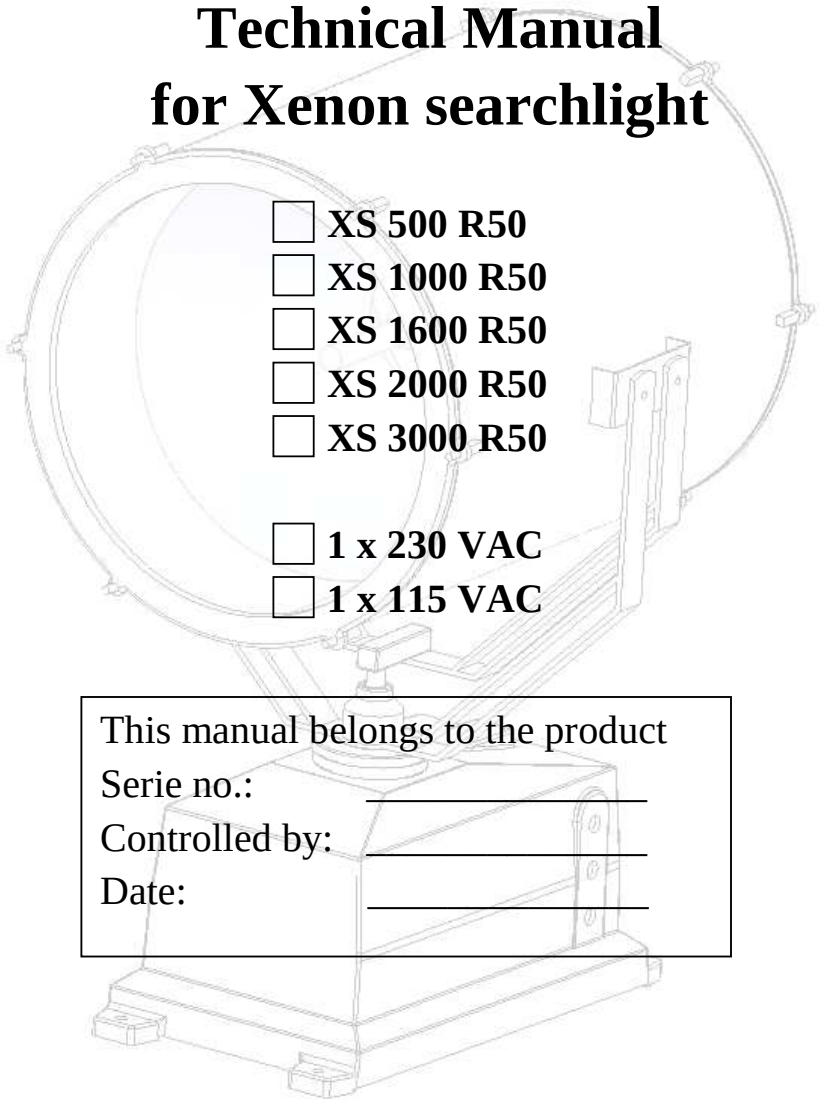
USER'S MANUAL

SEARCHLIGHTS XENON R50

NORSElight

NORSElight

Technical Manual
for Xenon searchlight



- ☐ **XS 500 R50**
- ☐ **XS 1000 R50**
- ☐ **XS 1600 R50**
- ☐ **XS 2000 R50**
- ☐ **XS 3000 R50**

- ☐ **1 x 230 VAC**
- ☐ **1 x 115 VAC**

This manual belongs to the product
Serie no.: _____
Controlled by: _____
Date: _____

GLAMOX aqua signal

GLOBAL MARINE & OFFSHORE
LIGHTNING SOLUTIONS

6500200A -

Introduction

For more than 90 years, **Norselight** have designed and manufactured lighting products for marine vessels. Through ongoing customer focused product development, **Norselight** continue to deliver quality products as demanded both at sea and on the rugged coastlines as the Norwegian.

This commitment to quality and expertise provides the foundation for **Norselight** to be possibly the world's leading supplier of maritime lighting.

However, in order to stay in front, **Norselight** would very much appreciate all comments that you may have regarding our quality products or services.

Therefore, if you have any technical or other questions, **Norselight** would be pleased to assist. Our Technical Department can be contacted as follows:

Tel: +47 69 17 99 99
Fax: +47 69 17 99 89
E.mail: office@norselight.no

We would also like to use this opportunity to thank you for choosing **Norselight** as your supplier of marine searchlights.

Guaranty

The guarantee is only valid against production faults. It do not cover damage caused by transportation, damage due to disregard of this technical Manual or adverse external effects.
Guarantee regarding the bulb, please look at the guarantee papers following the bulb. This must be filled in and returned to Norselight.

Table of contents

1 General description

1.1 Searchlight

The **searchlights** XS 500-1000-1600-2000 and XS 3000 are made from seawater resistant aluminium, welded and finished with white powder coat. The lamp housing basically contains one a lamp, a glass-reflector covered with silver, noise filters and a focus-motor for adjustment of the light beam.

1.2 The motor housing

The R50 motor housing is made from seawater resistant aluminium and finished with white powder coat. The motor housing basically contains one motor for vertical and another one for horizontal movement, a thermostat driven heating element and the electronic control system.

1.3 Control panel

Main Operation Panel.

It contains the following functions:

- Ready for max. 2 Slave Operation Panels (option)
- BUS communication.
- Lamp ON/OFF
- Joystick for sweep and tilt, horizontal and vertical movement.
- Speed regulator for sweep and tilt.
- Focus +/- (light beam adjustment)
- LED Indication for searchlight position 360^{o}.
- Searchlight ID-number
- End position function
- Designed for console or bulkhead mounting from front.
- DIM LED intensity on Main Operation Panel

Slave Operation Panel (Option).

It contains:

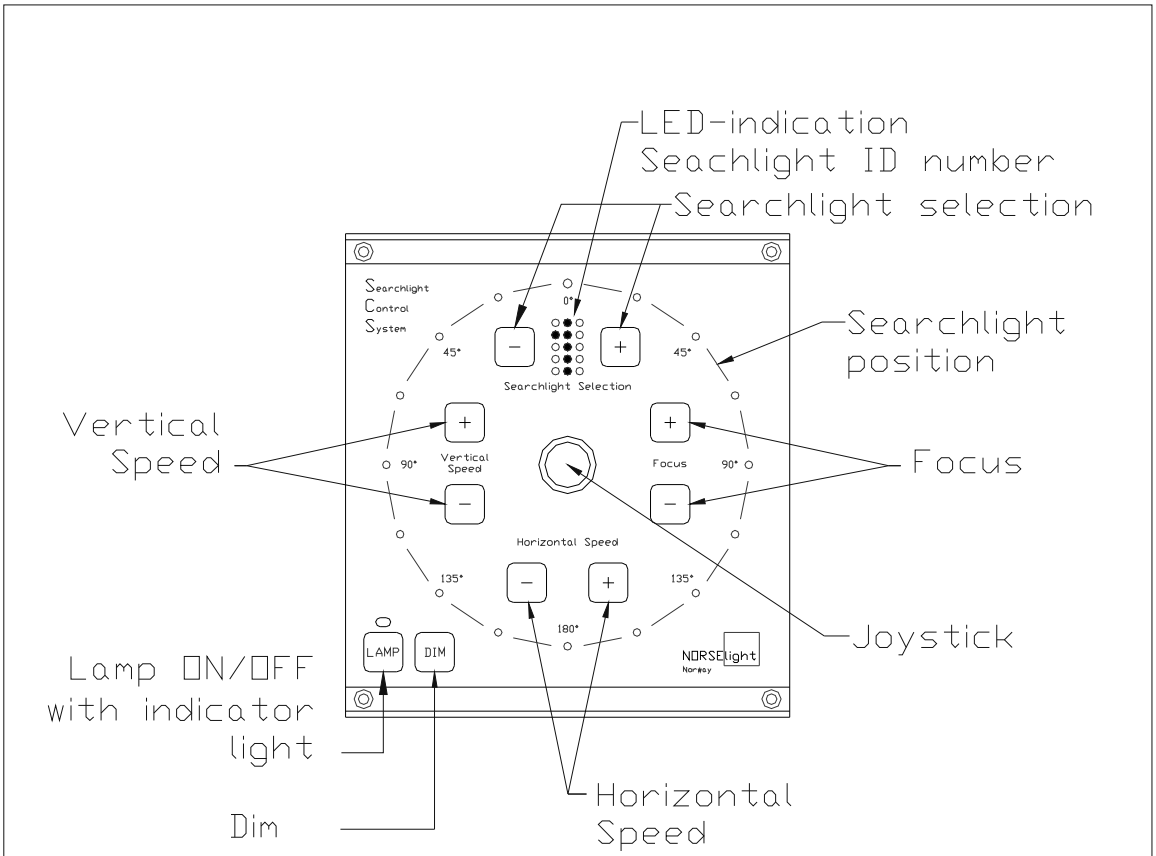
- Joystick
- Designed for console or bulkhead mounting from front.

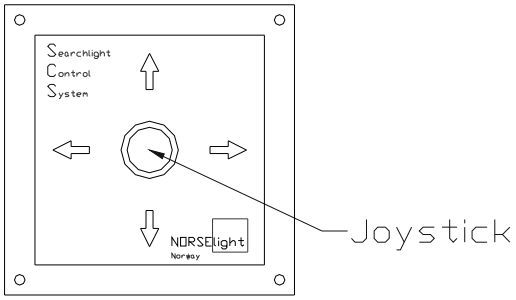
Wireless Operation Panel (Option).

It contains:

- On/Off Button
- Lamp ON/OFF
- Touch buttons for sweep and tilt, horizontal and vertical movement.
- Speed regulator for sweep and tilt.
- Focus +/- (light beam adjustment)
- LED Indication for searchlight position 360^{o}.
- Searchlight ID-number
- End position function
- Battery charger

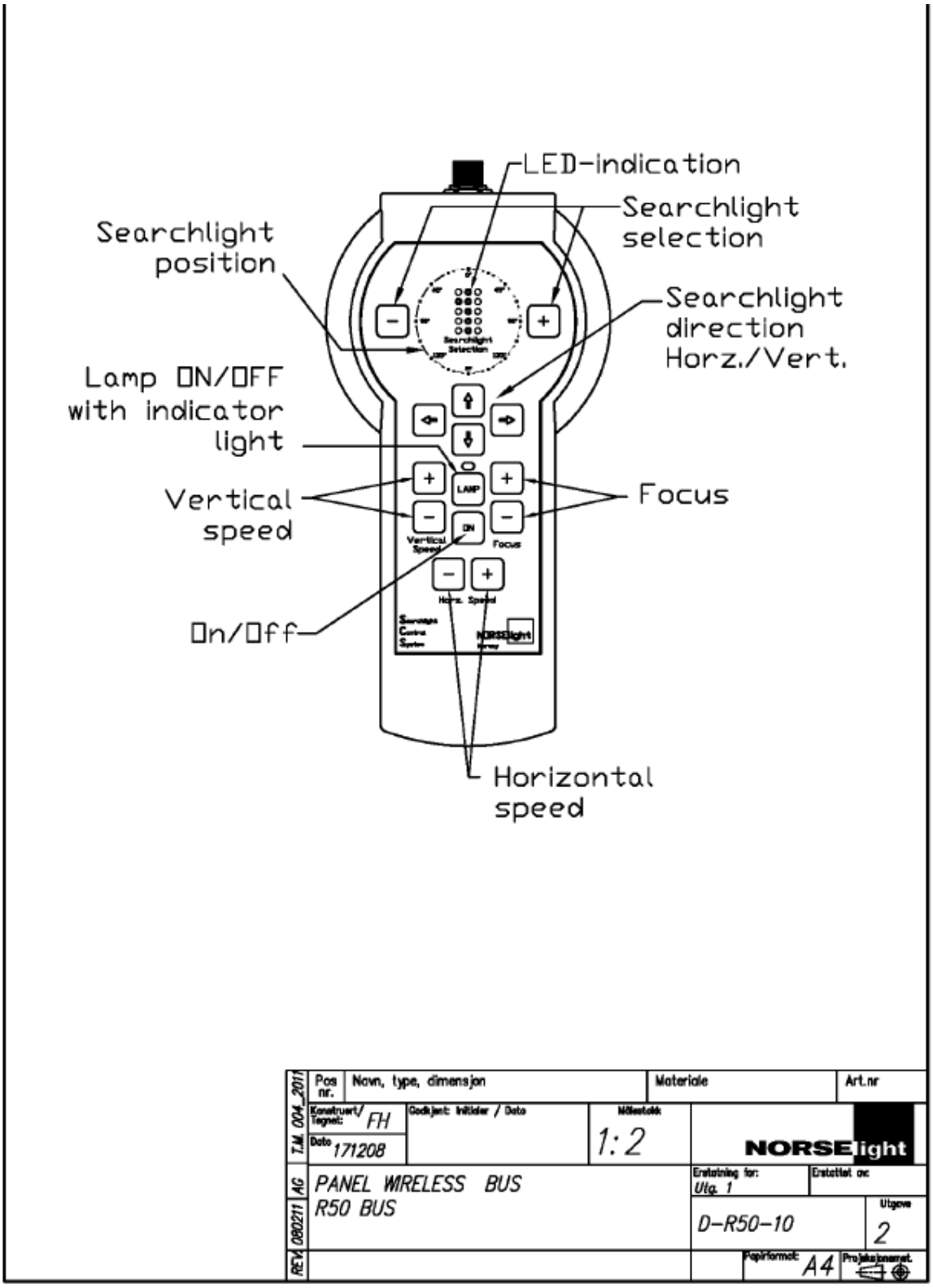
Main and Slave Operation Panel





Pos nr.	Navn, type, dimensjon	Materiale	Art.nr
Konstruert/ Tegnet: FH	Godkjent: Initialer / Dato	Målestokk 1:2	NORSElight
Dato 171208			
PANEL MAIN BUS and PANEL SLAVE BUS R50 BUS		Erstatning for:	Erstattet av:
		D-R50-09	Utgave 2
		Papirformat: A4	Projeksjonsmet.

Wireless Operation Panel



Pos nr.	Navn, type, dimensjon	Materiale	Art.nr
Konstruert/ Tegnet: FH	Godkjent: Initialer / Dato	Målestokk 1:2	NORSElight
Dato 171208	PANEL WIRELESS BUS R50 BUS	Erstatning for: Utg. 1	Erstattet av:
		D-R50-10	Utgave 2
		Papirformat: A4	Projeksjonsmet.

T.M. 004_2011 AG 080211 REV

1.4 The Ethernet Switch:

It contains:

- 5 port x RJ45
- DIN rail mounting
- Power 24V DC + ground

1.5 High Sensitive Receiver:

The Access Point is a high sensitive receiver for the wireless panel build for maximum range and durability. The Access Point communicate with the wireless bus, witch remotely controls the searchlights with R50 motor unit. The control system is based on TCP/IP technology were several different Operator Panel can control separately up to 9 searchlights of Xenon or Halogen. The system is connected to the same network through LAN switch to connect to a network of searchlights. Control panels both hard wired and wireless, are fitted into a standard solution.

Features and Benefits:

- Wireless receiver for SCS wireless Bus
- Bolt-on to Norselight`s network of searchlights
- Die-Cast Aluminium, Compact and new design
- Based on TCP/IP technology
- Waterproof, quick disconnect RJ-45 connector
- Custom made for Offshore
- Supports masts up to 3" diameter
- 200m Area wireless coverage
- IP67, RoHs, FCC, CE, IC Complaint
- -45 to +65 degree operation temperature

Package Include:

- 1x Wireless receiver unit
  1x PoE Power supply
- 1x 5dBi wireless antenna
- 1x USB recovery stick
- (Network cables, not included)

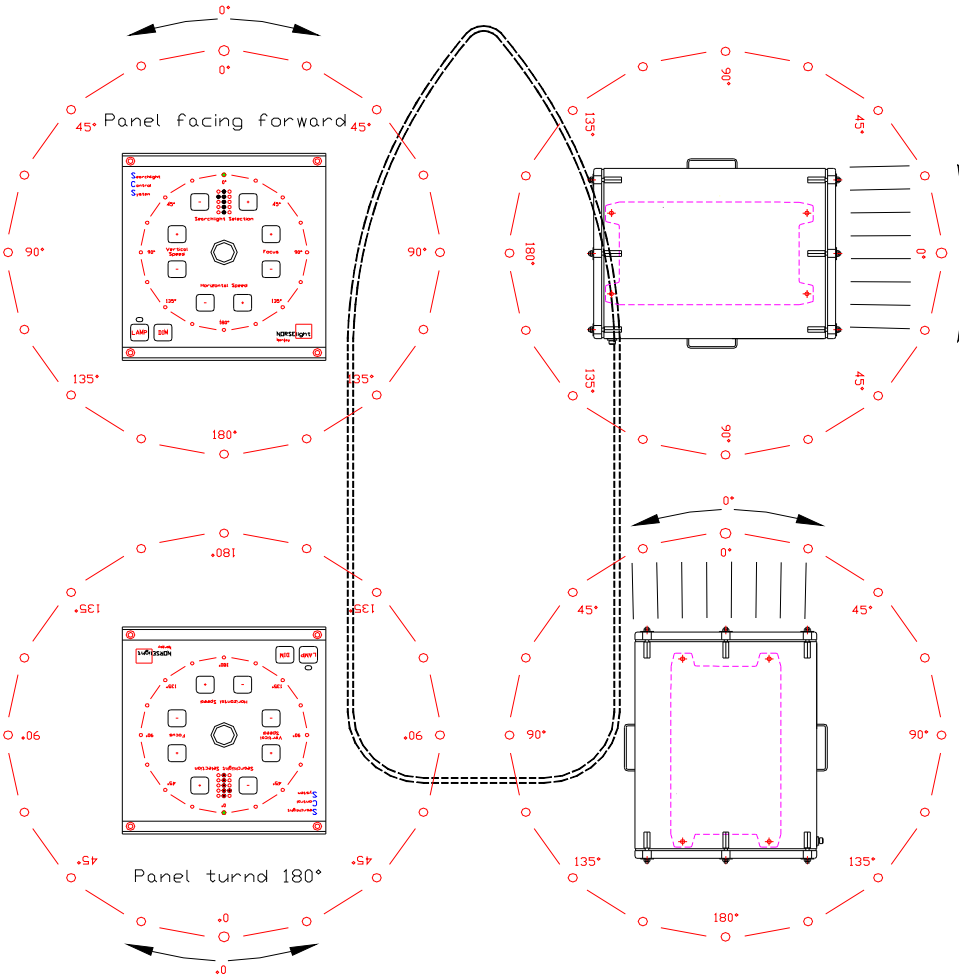
1.6 Main Control Panel position indicator versus searchlight position:

In accordance to MSC/Circ. 982 Pos 5.5.1 “Movement of Controllers” and 5.5.2 “Corresponding Movements “

The position indicator on the Main Control Panel indicates the position of the searchlight. 0^{o} position on the panel indicates that the searchlight is positioned straight forward compared to the searchlight 0^{o} position.

The searchlight has an 180^{o} movement to the left and right end position, in total 360^{o}.

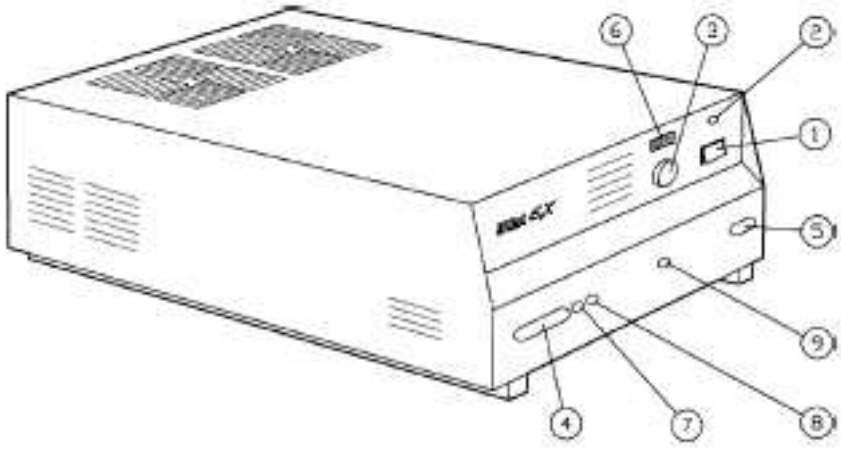
To calibrate the position indicator, you simply use the joystick on the Main Control Panel to turn the searchlight to end stop to both left and right end position.



1.7 Power Supply (Rectifiers):

EX-30 G/1

EX30-G/1, single phase 90-265V 50/60Hz electronic power supply is specifically suitable for feeding 250 to 500W short arc Xenon lamps. Weight 8kg. Further instructions in Installation guide for Rectifier.

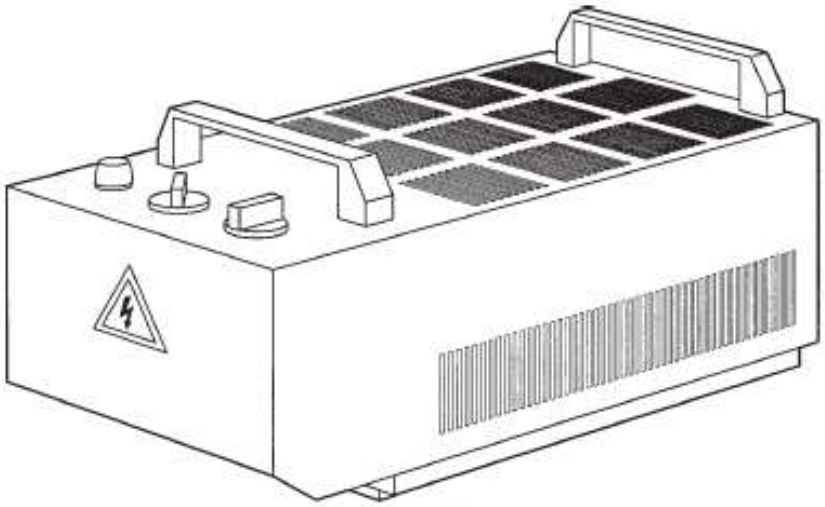


1. Lamp ON/OFF switch
IMPORTANT NOTE: DO NOT USE THIS SWITCH FOR THE REMOTE CONNECTION !

2. Mains on LED
3. Lamp current potentiometer
   Adjusting the lamp output current
4. Input terminal board
5. Output terminal board
   Used to connect the lamp power cables (+, -)
6. Current LED bar
   Indicating the output current level (12A to 30A)
7. Lamp ON terminal board
8. Remote lamp ON/OFF terminal board
9. Igniter insertion terminal board

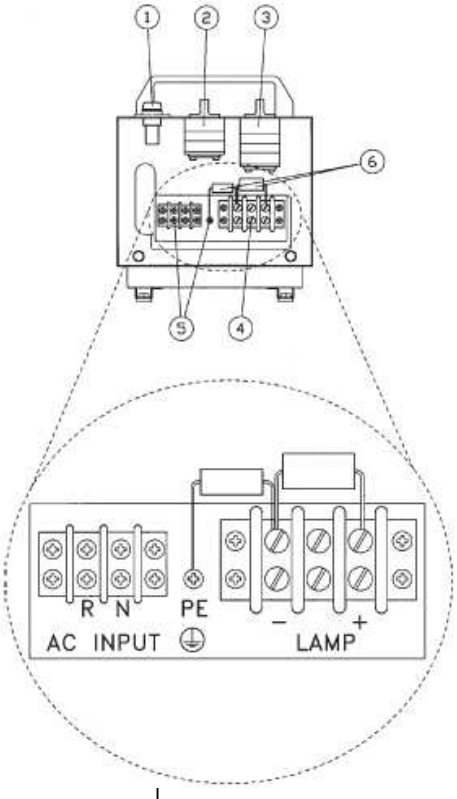
PX-50 N

These extremely compact rectifiers for single-phase inputs have been designed to feed 1000W Xenon lamps, meeting the requirements of lamps manufacturers to ensure correct operation and long life of the lamp. The units are fitted with a transformer with taps for output lamp power regulation and a special circuit to avoid the lamp turn off during the tap switching. The cabinet, equipped with carrying handles, permits an easy inspection of the inside components. Weight 63 kg. Further instructions in Installation guide for Rectifier.



Control devices

1. Mains fuse (F1)
2. ON/OFF switch and high/low diode protection (C2, C7, C8) lamp output current setting (Q1)
3. 6 steps lamp output current setting Q2))
4. Output terminals (-,+) (X2)
5. Input terminals (R, N plus PE)(X1)
6. HF filtering capacitors (C5-C6)



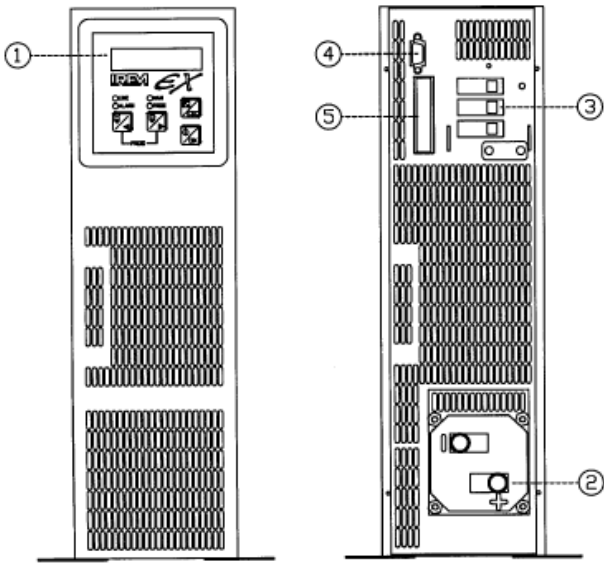
6500200A

EX-100 D/1

This electronic power supply for single phase or double phase 230Vac 50/60Hz input, has been designed to feed from 1000W to 3000W short arc Xenon lamps, meeting all the requirements of lamp manufacturers to ensure correct operation, long life to the lamp, and high reliability. Weight 18 kg. Further instructions in Installation guide for Rectifier.

Control devices

1. Synoptic panel
2. Output terminal block
3. Input terminal block
4. RS232 connector
5. Auxiliary connector

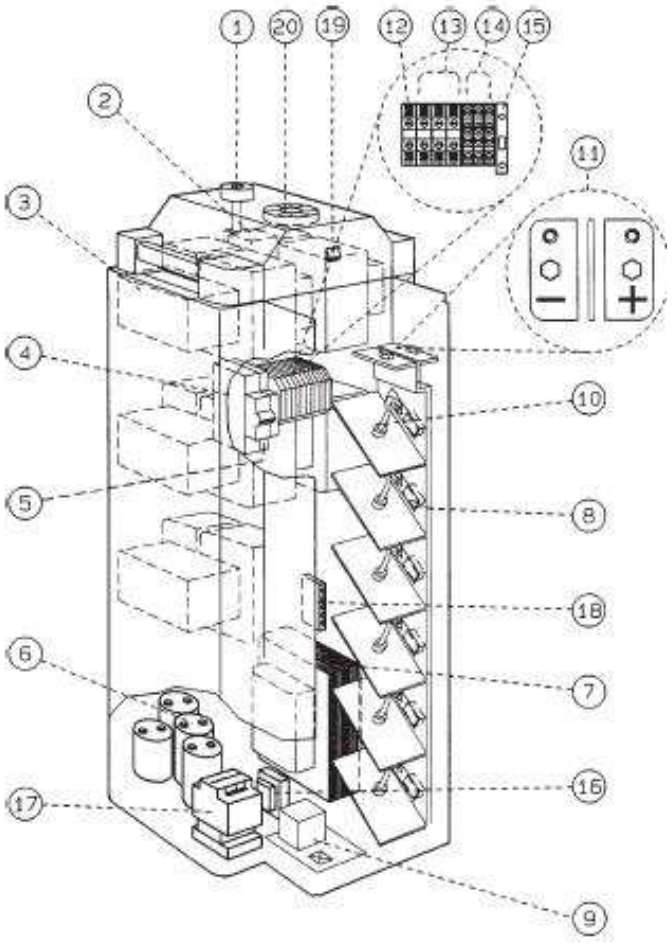


N3-80 / N3-150

These high quality rectifier power supplies have been expressly designed to ensure the correct operation and long life of short arc Xenon lamps. These units, developed to meet the recommendations of Xenon lamp manufacturers, are fitted with special IREM transformers with adjustable magnetic shunt for continuous output regulation over the entire operating range.
The new and peculiar design guarantees a low acoustical noise, i.e. less than 55dB(A).
The special design, including an auxiliary filter unit, ensures a low ripple with a negligible starting energy. Weight N3 – 80 101 kg and N3 – 150 154 kg. Further instructions in Installation guide for Rectifier.

Component layout

1) Adjustment hand-wheel
2) Magnetic shunt (MS)
3) Transformers (T1 to T3)
4) Circuit breaker (QF) *
5) Auxiliary contact (S2) *
6) Output filter capacitors (C7 - C8)
7) Auxiliary filter (AF) (L) (on request for N3-50E, N3-80E, N3-100E models)
8) Protection capacitors (C1 to C6)
9) Ignition relay (A1)
10) Silicon diodes (D1 to D6)
11) Output terminals (+ , -)
12) Ground terminal (PE)
13) Input terminals (U V W)
14) Alarm ON/OFF terminal (X1) *
15) Fuse holder for main switch coil
16) Auxiliary transformer (400V/415V versions only)
17) Contactor for remote control
18) Auxiliary connector (for manual switch on breaker connection and fan powering (N3-150E and N3-180E models))
19) ON/OFF switch with lock
20) Fan (N3-150E and N3-180E models)



2 Technical data

2.1 Xenon Searchlight

Properties	**Value**				
Searchlight	***XS 500***	***XS 1000***	***XS 1600***	***XS 2000***	***XS 3000***
Dimension Height:	*890 mm*	*930 mm*	*930 mm*	*1020 mm*	
Width:	*470 mm*	*515 mm*	*515 mm*	*615 mm*	
Weight of searchlight:	*46,5 kg*	*49,5*	*51,5 kg*	*61,5 kg*	*64,5 kg*
Weight of the SCS panel:	*0,5 kg*				
Lamp type (W)	*XBO 500*	*XBO 1000*	*XBO 1600*	*XBO 2000*	*XBO 3000*
Working voltage power supply	*115V/230V*				
Rated Lamp voltage / Rated lamp current	*18V / 28A*	*20V / 50A*	*23V / 65A*	*27V / 70A*	*30V / 100A*
Lifetime (approx.)	*2000 h*	*1500 h*	*1500 h*	*2000 h*	*1500 h*
Luminous flux	*14 500 lm*	*32 000 lm*	*60 000 lm*	*80 000 lm*	*85 000 lm*
Focus distance	*89mm (3,5")*	*70mm (2"3/4)*		*82,6 mm*	
Parabolic silver plated glass reflector	*Dia.305mm (12")*	*Dia.356mm (14")*		*457 mm (18")*	
Divergence:	*2-7°*		*3-8°*	*2-7°*	*3-8°*
Range at 1 lux: (Theoretical calculation)	*4600m*	*6400m*	*7 200 m*	*9200 m*	*11500 m*
Vertical movement: Speed:	*1-10°/sec*			*2.8°/sec*	
Range:	*+25°/ -30°*			*+ -25°*	
Horizontal movement: Speed:	*1-20°/sec*			*1-18°/sec*	
Range:	*±180°*			*±180 °*	
Type of Power Supply 115V	*EX-30 G/1*	*PX-50N*	*On request*		
Type of Power Supply 230V			*EX-100D/1*		
			N3 -80	*N3-150*	
Drum and motor housing material	*Seawater resistant aluminium 57S*				
Fork and lifting rod material	*Stainless steel SIS AISI 304*				
Screw joint material	*Stainless steel A4*				
Surface treatment	*White powder coated (RAL 9016)*				
Protection class	*IP 56*				

2.2 Main Operation Panel

Standard	IEC 60945 Ed4 (2002-08)
Number of panels	Standard max 9 pcs in one system
Network	Star and Tree network topology.
Interface	RJ45 port 10/100
	LAN cable CAT5e - CAT7 twisted (568b)
Power Requirements	Power input: 24VDC (18-30VDC)
	Power consumption: <3.5W
Physical Characteristics	Casing: IP22 protection
	Dimensions(WxHxD): 147x160x43,4 mm (5.8x6.3x1.7 in)
	Weight: 500g (1.1 pound)
	Installation: Table mounting from front
Environmental Limits	Operating Temperature: -15 to 50°C(5 to 120°F)
	Ambient Relative Humidity: 0 to 95% (non-condensing)
Compass Safe distance	Standard: 40 cm
	Steering: 30 cm
Cerificates	DNV

2.3 Slave Operation Panel

Standard	IEC 60945 Ed4 (2002-08)
Number of panels	Standard max 2 pcs to each Main Operation Panel
Network	Direct connection to Main Operation Panel.
Interface	Phoenix he/she connector 3,81 pitch
	Cable 5 wire + shielded, connected 1 to 1
Power Requirements	N/A
Physical Characteristics	Casing: IP22 protection
	Dimensions(WxHxD): 96x96x25 mm (3.78x3.78x0.98 in)
	Weight: 100g (0.22 pound)
	Installation: Table mounting from front
Environmental Limits	Operating Temperature: -15 to 50°C(5 to 120°F)
	Ambient Relative Humidity: 0 to 95% (non-condensing)
Compass Safe distance	Standard: 45 cm
	Steering: 35 cm
Cerificates	DNV

2.4 Wireless Operation Panel

Tested according to	IEC 60945 Ed4 (2002-08) IEC 60092-101, -504 IEC 60068-2-1, -2-2, -2-30
Network	Wireless connection through Access Point
Interface	Standard: IEEE 802.11b Frequency: 2.4 GHz Data Rate: Up to 11 Mbps with automatic fallback Modulation: CCK (11/5 Mbps), DQPSK (2 Mbps), DBPSK (1Mbps) Transmit Power: 16 dBm typical Receive sensitivity: – 1Mbps: -92 dBm – 2Mbps: -89 dBm – 5.5Mbps: -87 dBm – 11Mbps: -82 dBm Antenna Connector: 1 x RP-SMA
Power Requirements	Battery: 4,8V (4 celle's) 1650mAh NiMh Charger: 230 VAC, 70-150mAh, 3-10 celle's, NiCd/NimH
Physical Characteristics	Casing: IP65 protection Dimensions(WxHxD): 117x228x46,24 mm (4.6x8.97x1.82 in) Weight: 500g (1.1 pound)
Environmental Limits	Operating Temperature: -25 to 70°C(-13 to 158°F) Ambient Relative Humidity: 0 to 95% (non-condensing)
Compass Safe Distance	Standard: 35 cm Steering: 25 cm

2.5 Switch

KIEN1005

Standard	IEEE802.3 IEEE802.3u IEEE802.3x IEEE802.1p Store and forward switching mode
MAC Address Table Size	32K
Network	Chain and star network topology.
Service	Diagnostics: LEDs(power, link status, port rate,) Port priority: QoS for 5th port (default high priority) Current over-load protection: Yes(AC220V) Reverse polarity power connection protection: Yes Broadcast storm protection: Yes
Interface	RJ45 port 5x10/100Base-TX(KIEN1005-5T) RJ45 port 4x10/100Base-TX and Fiber port 1x100Base-FX (KIEN1005-1S(M)-4T)
Power Requirements	Power input: 24VDC (12-36VDC), 220VDC/AC Power consumption: <3.5W
Physical Characteristics	Casing: IP40 protection Fanless design Dimensions(WxHxD): 36.5x120x90 mm (1.44x4.72x3.54 in) Weight: 300g (0.66 pound) Installation: DIN-35 Rail or wall mounting.
Environmental Limits	Operating Temperature: -40 to 85°C(-40 to 185°F) Storage Temperature: -40 to 85°C(-40 to 185°F) Ambient Relative Humidity: 0 to 95% (non-condensing)
Approvals	IEC61000-4-2(ESD): ±8KV contact discharge, ±15KV air discharge IEC61000-4-3(RS): 10V/M (80-1000MHz) IEC61000-4-4(EFT): ±4KV power line, ±2KV data line IEC61000-4-5(Surge): power line ±4KV CM/ ±2KV DM, data line ±2KV IEC61000-4-6(CS):3V(10KHZ-150KHZ),10V(150KHz-80MHz) IEC61000-4-8(Power frequency magnetic field):100A/m cont. 1000A/m, 1s to 3s
Cerificates	DNV,CE, FCC, UL, RoHS

2.6 Access Point

High Sensitive Receiver for Wireless Operation Panel

REGULATORY/ COMPLIANCE INFORMATION

Wireless Approvals	FCC, IC, CE
RoHs Compliance	Yes
IP/NEMA Compliance	IP67/ NEMA 6

DIAMETER RANGE PERFORMANCE

11Mbps	200m
5.5Mbps	400m
2Mbps	800m
1Mbps	1600m

RADIO OPERATING

Frequency	2412-2464 MHz
TX Power	15dBm (20dBm EIRP including Antenna)
RX Sensitivity	-90dBm @ 11Mbps

ANTENNA SPECIFICATION

Gain	5dBi Omni directional
Frequencey	2400-2485 MHz
Vertical/horizontal BW	25x360 degree
Weight	0.5Ibs (0.2Kg)
Dimension	355x15mm

PHYSICAL / ELECTRICAL / ENVIRONMETNAL

Enclosure Size	185x130x50mm
Mounting	Supports masts up to 3" diameter
Weight	1.50kg
Enclosure Characteristics	Solid Die cast aluminium
Operating Temperature	-45C to +65C

3 Installation

3.1 Mechanical installation

- The searchlight must be mounted on a horizontal surface using 4 stainless screws.
- The Main/Slave Operation Panel and the Switch is designed for installation in indoor applications.
- The Access Point is designed for out side installation.
- The Rectifier is designed for inside installation.

3.2 Electric installation

- The Main Operation Panel requires 24V DC connected in series with a 1A fuse to the positive (+) conductor.
- The Switch requires 24V DC. In addition to grounding
- Depending on The Searchlight model it requires 115V AC or 230V AC.
- Power supplied to the power supply unit must be 2 or 3-phase.
- Current supplied to the lamp unit must be specific (se technical data for specific Type).

Note: **Disconnect the power when working on the equipment!**
Electrical equipment must be installed by authorised personnel!
Check the polarity when connection of 24VDC!
All Searchlight system equipment MUST BE connected to ground/earth!

Current supplied to the lamp unit must be 65A DC for 1600W, 70A DC for 2000W and 100A for 3000W.

To be able to turn off the searchlight from the main panel, the switch on top of the Power Supply N3-80 or N3-150 must be in position “0” (Zero). See picture 1

Picture 1:

3.3 BUS installation

- The BUS communication system requires minimum LAN CAT5e, 4 pair shielded twisted pair cable.
- All connection entries need RJ45 connector using T-568B cable standard.
- Make sure that all cable entries maintain their shield protection.

Note: **Follow the installation requirements from your cable supplier!**
Avoid brakeage on the Ethernet connectors (panel, switch and searchlight COM module)!

3.4 Start up procedure

- Adjust the lamp power. Look at the manual for the power supply.
  When the lamp is lit, the lamp power should be adjusted up to a max of
  28A DC for 500W
  50A DC for 1000W
  65A DC for 1600W
  70 A DC for 2000W and
  100A for 3000w lamp. This current must be measured with a clamp-on amp-meter on the cable between the power supply and the lamp unit.
  The current can be corrected by use of the wheel on the power supply.

- Powering up. By powering up the SCS R50 Searchlight system, the panel indicate splashing figure in LED display of the Operating Panel. The system starts to search for all units connected to the system. After few seconds a specific number of the searchlight in contact, will appear in the LED display.
- Position Calibration Turn the searchlight to Starboard side by using the Joystick turning non stop until **T** appears in LED-indication of the Main Operation Panel. Then turn to Port side non stop to the end position until **T** appears in LED-indication. Now the searchlight position indication will follow the movement of the searchlight 360^{o}.

Note: **It is important to follow correct currency to optimize lamp life.**

4 Operation

4.1 Operation Panels function

LED-indication display:

- Searchlight number in use
- Indication level of Dim-light intensity.
- Indication level on vertical and horizontal speed.
- End stop indication **T +/-180^{o}**
- Alarm indication **A**, when stop occurs before end stop.

Searchlight selection:

- Allow you to choose the searchlight you want to use, if there is more than one searchlight available. Allow max. 9 searchlights to use.
- By pushing the +/- button, you select up/down from searchlight no. 1 to 9.

Searchlight position:

- Indicate what position the searchlight is pointing towards (360^{o}).

Focus:

- Adjustment of the light beam.
  - Focus +: Narrow beam
  - Focus –: Wide beam

Vertical speed:

- Adjusts the motor speed vertically in the range from 1 to 15 (indicated in LED display).

Horizontal speed:

- Adjusts the motor speed horizontally in the range from 1 to 15 (indicated in LED display).

Lamp:

- LAMP: Lamp on/off function. Green LED for lamp ON.

Dim:

- Adjusts the intensity of the backlight in the panel, indicated in LED-indication display.

Joystick (Searchlight direction Horizontal/Vertical):

- Allow the searchlight to move up, down or diagonal.

4.2 Change of the lamp

Warning!

When changing the bulb, use facial protection and leather gloves as accidental breakage of the glass bulb can critically harm anyone within a radius of 8m.

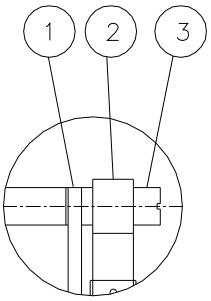
Note: Do not touch the bulb with bare hands or with anything greasy. The bulb must be clean.

Note: The XBO light bulbs work under high pressure and can explode if not handled carefully.

Note: Be ware of a hot bulb!
Do not touch the bulb with bare hands or anything greasy!
The bulb must be clean!
USE eye protection!

Be careful to not damage any parts. Don't touch the bulb with bare hands. Check the lamp housing gasket for damages and impurities.

- Cut the main power to the searchlight.
- The lamp housing must **not** be opened until at least 10 minutes after the lamp has been turned off or until the lamp is cooled down. Put on the protection cover including a facial protection **and gloves.**
- In front of the Lamp Holder, first loosen the locking screw (1), loosen the positive contact on the lamp (2), and then remove the front Teflon holder (3).
- Unscrew the bulb from the negative contact (In front of the rear Teflon holder).
- Change the bulb and reassemble in reverse order.
- Check the level of Greece and refill when needed in glider for Lamp Holder.
- Check the lamp housing gasket for leakage.



4.3 General Searchlight Maintenance

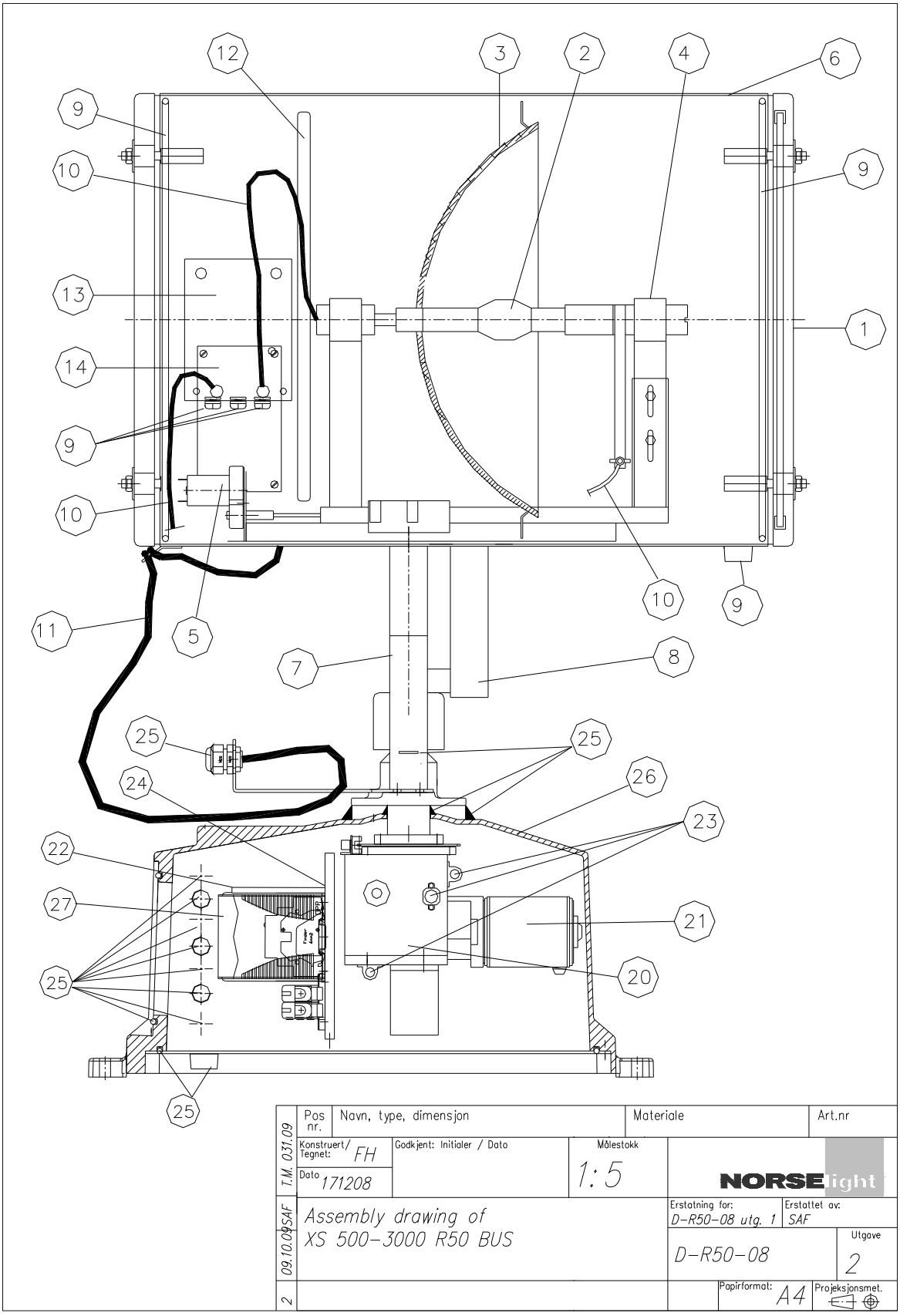
Recommended intervals not exceeding 6 months:

- **Cut the main power to the searchlight!**
- Control of all gaskets and cable glands.
- Control of all screw and nut connections.
- Check lamp holder with contact points.
- Check the level of Grease and refill when needed in glider for Lamp Holder.
- Reflector and front glass to be cleaned with a soft cloth and ethanol.
- Tighten all terminal strips in the searchlight junction box.
- After half burning time of the bulb, remove washer on the negative contact. This allows the bulb to make a half turn. This is done to rotate the coating built up on top of the bulb.
- Check the level of Grease and refill when needed underneath the VS120 gasket on the top of the motor housing.

5 Spare Parts list

OR = On Request, N/A = Not Available

Pos	Spare KIT Xenon R50	XS500	XS1000	XS1600	XS2000	XS3000
1	Front Ring complete	1009175	1009169		1009149	
2	Lamp Xenon	1009211	1009207	1009209	1009210	1009213
3	Reflector complete	1009193	1009172		1009179	
4	Lamp Holder Complete w/focus	1009188	1009171		1009189	1009192
5	Focus unit Xenon, complete	1009168				
6	Drum complete	OR	OR	1009137	OR	OR
7	Forks	1009315	1009314		1009313	
8	Manouver Fork	OR	OR	OR	OR	OR
9	Seal KIT, Drum	OR	OR	OR	OR	OR
10	Cable kit, drum	OR	OR	OR	OR	OR
11	Cable, external, Xenon	OR	OR	OR	OR	OR
12	Heat Element Drum 115V	1009135			1009136	
12	Heat Element Drum 230V	1009173			1009118	
13	Ignitor, 230V	1009240	1009239			1009237
13	Ignitor, 115V	1009235	1009241			1009236
14	Noise filter kit complete	OR	OR	OR	OR	OR
20	Gear Complete 115V	OR				
20	Gear Complete 230V	OR				
21	Motor Vert	1009224				
21	Motor Hor	1009224				
22	Heat Element Gear 115V	1009233				
22	Heat Element Gear 230V	1009232				
23	MDC complete	OR				
24	Powermodule R50, complete	1009196				
25	Seal KIT, Motor house	OR				
26	Motorhouse, complete	OR				
27	Power supply, motor house	3009009				

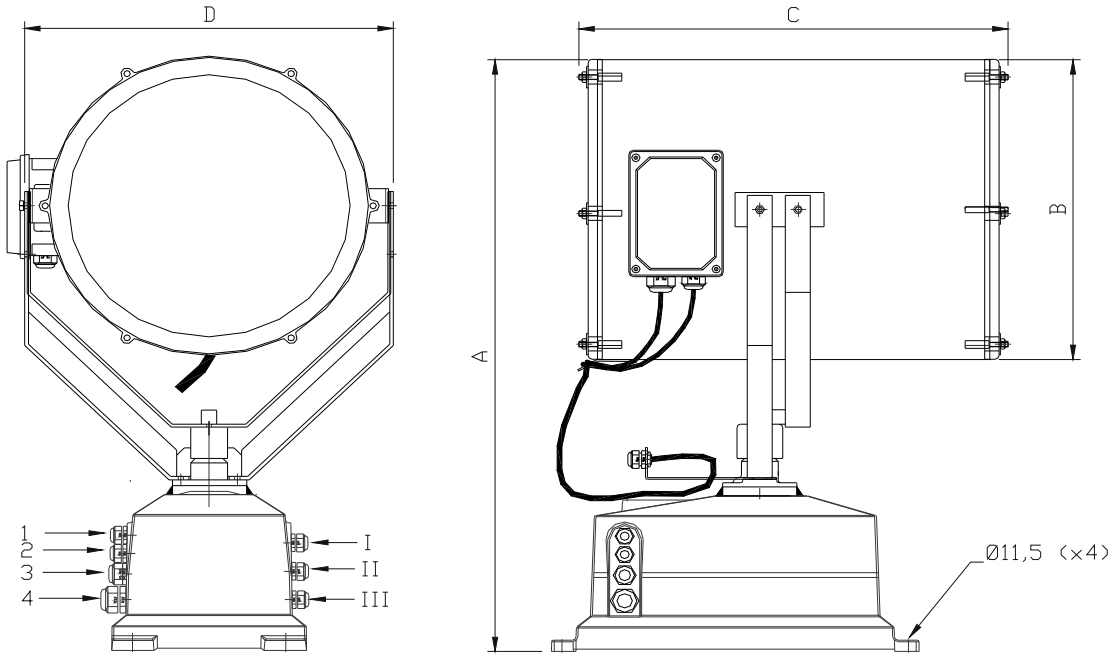


Pos nr.	Navn, type, dimensjon	Materiale	Art.nr
T.M. 031.09	Konstruert/ Tegnet: FH	Godkjent: Initialer / Dato	Målestokk 1:5
	Dato 171208		NORSElight
09.10.09 SAF	Assembly drawing of XS 500-3000 R50 BUS	Erstatning for: D-R50-08 utg. 1	Erstattet av: SAF
		D-R50-08	Utgave 2
2		Papirformat: A4	Projeksjonsmet.

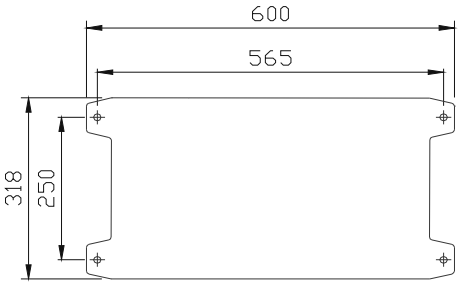
6 Drawings

6.1 Mechanical Dimensions

XS 500 to 3000 R50



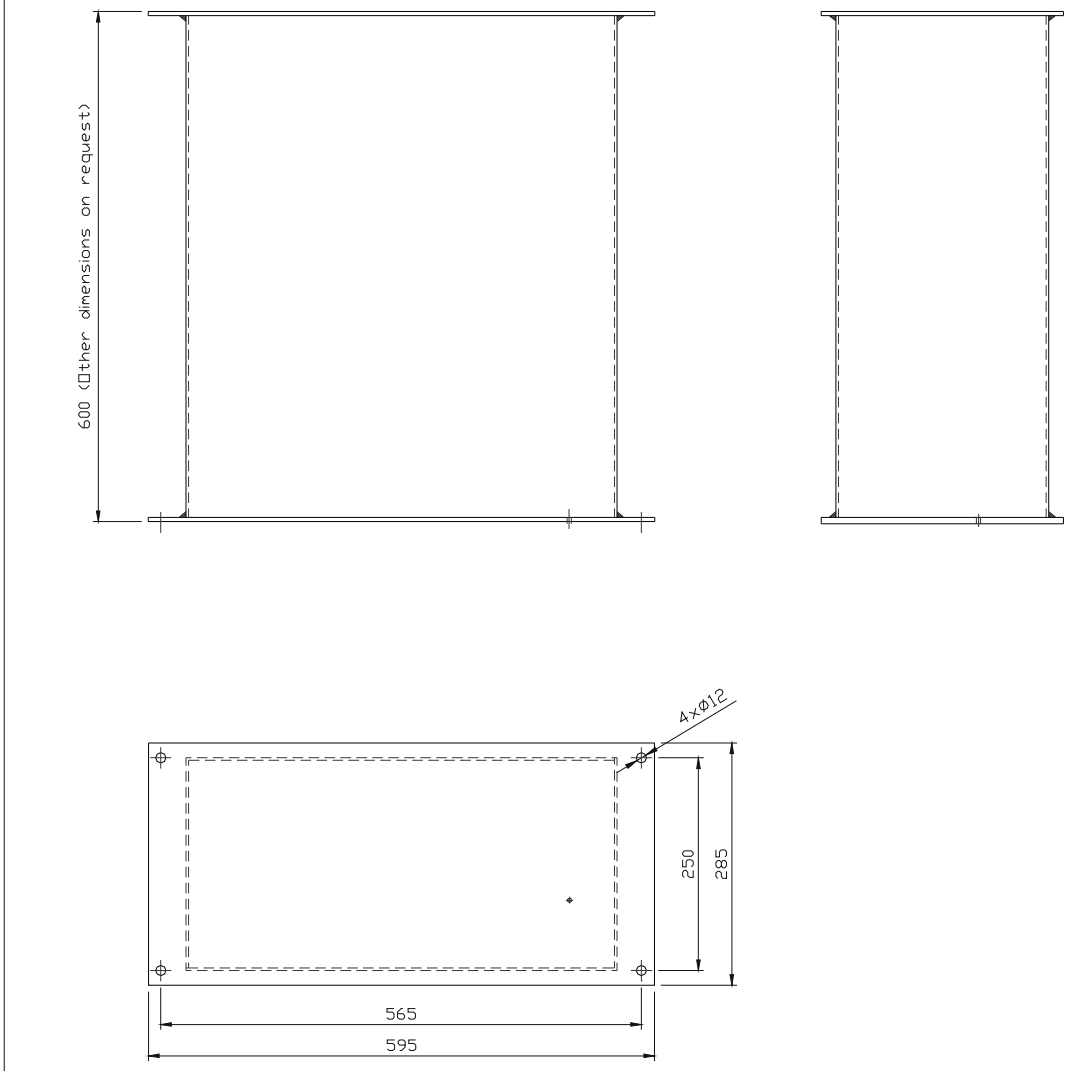
DATA / TYPE	A	B	C	D
XS 500	890	380	470	470
XS 1000/1600	930	425	610	515
XS 2000/3000	1020	525	685	615



Entry # / Description	I	II	III	1	2	3	4
Cable Gland	M20	M20	M20	M20	M20	M25	M32
Cable Ø min/max	7-14mm	7-14mm	7-14mm	7-14mm	7-14mm	9-18mm	14-25mm
Cable entry XS 500 - 1000	Norse-light side	Norse-light side	Norse-light side	Power Rectifier	LAN	Power grid	Lamp Power
Cable entry XS 1600 - 3000				Signal Rectifier	LAN	Power grid	Lamp Power

T.M. 033-09	T.M. 010-09	Pos nr.	Navn, type, dimensjon	Materiale	Art.nr	
		Konstruert/ Tegnet: FH	Godkjent: Initialer / Dato	Målestokk 1:10	NORSElight	
SAF	FH	Dimensions of Xenon XS 500-3000 R50 BUS		Erstatning for: D-R50-03 v2	Erstattet av: SAF	
161009	120309			D-R50-03	Utgave 3	
3	2				Papirformat: A4	Projeksjonsmet.

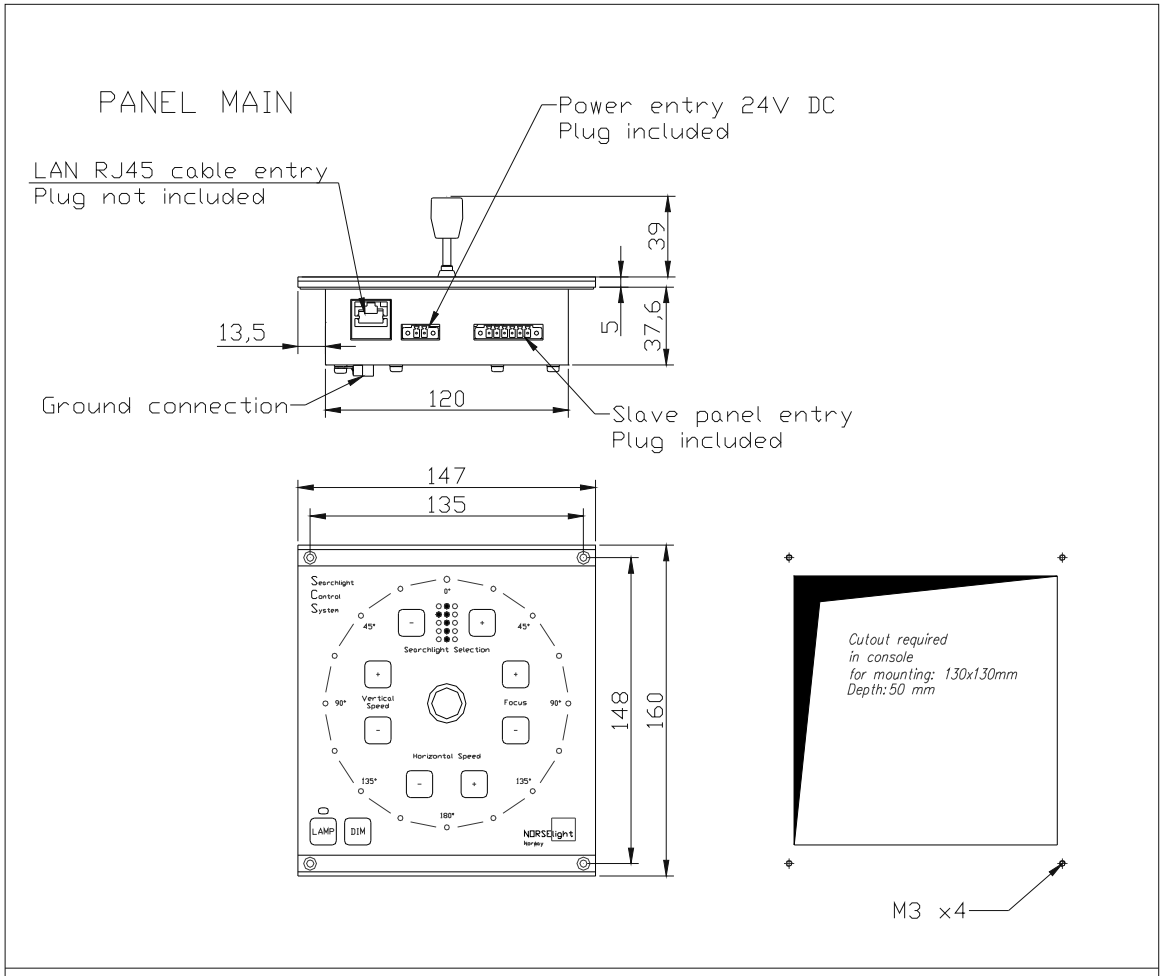
Pedestal R50



T.M. 039-08	Pos nr.	Navn, type, dimensjon	Materiale	Art.nr
	Konstruert/ Tegnet: FH	Godkjent: Initialer / Dato	Målestokk 1:5	NORSElight
	Dato 240608			
FH	Pedestal R50 60 cm		Erstatning for: 200900500-1	Erstattet av:
171208			200900500	Utgave 2
2			Papirformat: A3	Projeksjonsmet.

6500200A

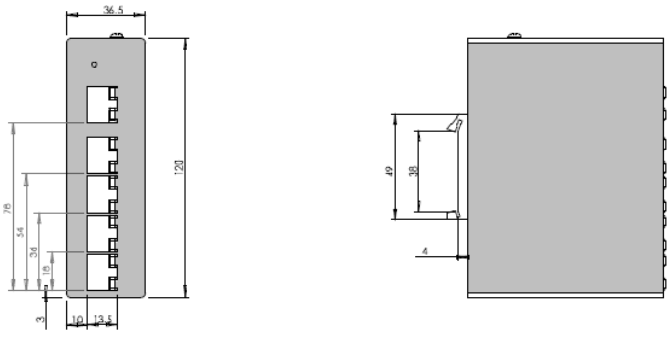
Operation Panel (Main and Slave) w/cut dimensions

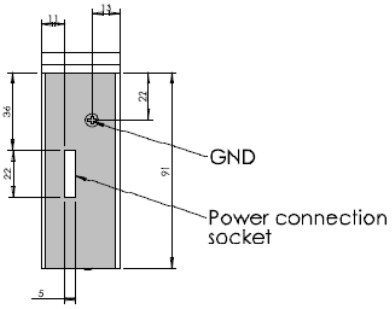


Pos nr.	Navn, type, dimensjon	Materiale	Art.nr
T.M. 034-09	Konstruert/ Tegnet: FH	Godkjent: Initialer / Dato	Målestokk 1:3
	Dato 171208		NORSElight
16.10.09 SAF	Cutout PANEL MAIN and PANEL SLAVE R50 BUS	Erstatning for: D-R50-04 UTG 1	Erstattet av: SAF
		D-R50-04	Utgave 2
2		1	Papirformat: A4 Projeksjonsmet.

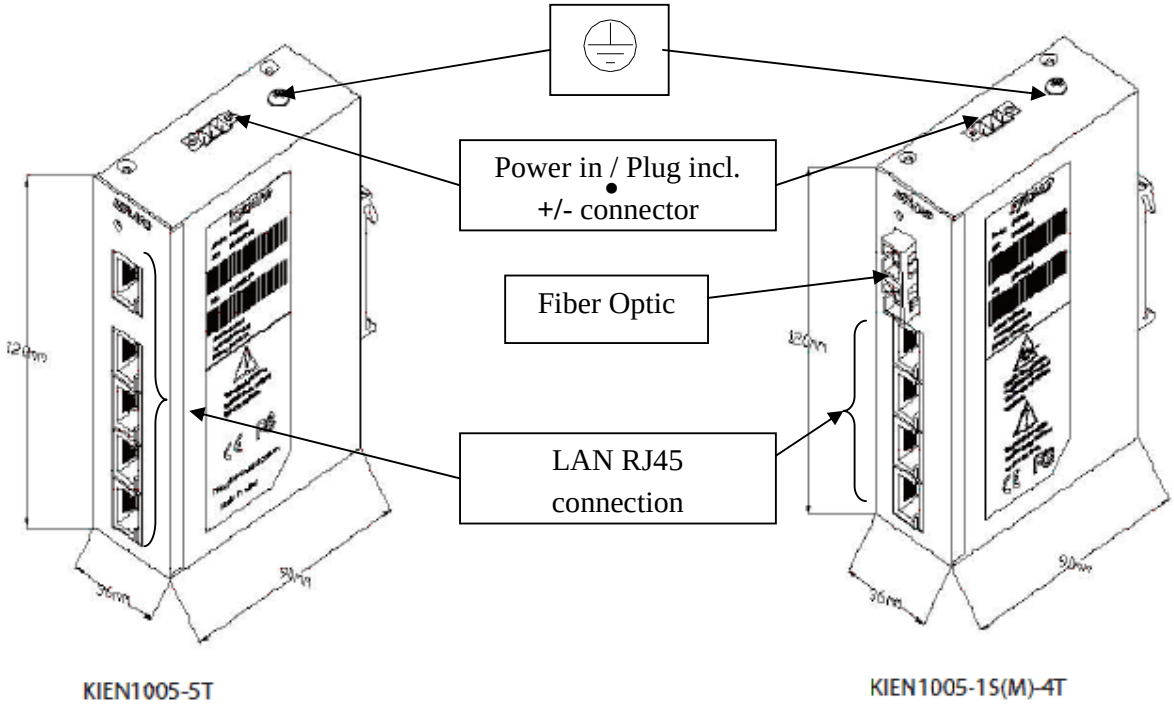
6500200A

The Switch BUS dimensions.

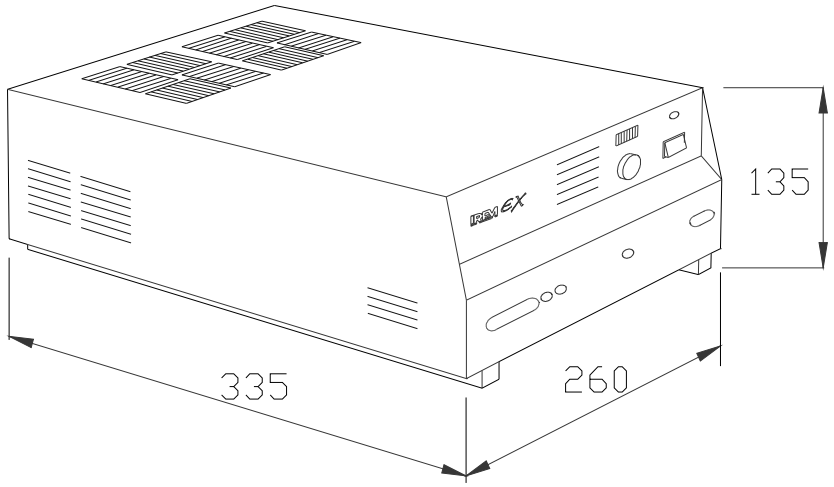




Fits for 5 LAN cable entry for RJ45 plug (KEIN1005S-5T) or
1 one full-duplex fiber port of 100Base-FX, single mode or multimode and 4 LAN cable entries (KEIN1005-1S (M)-4T).
Look in the manual for KEIN1005 for more details.
Installation: DIN-35 Rail or wall mounting



Power Supply (Rectifiers)
EX-30 G/1

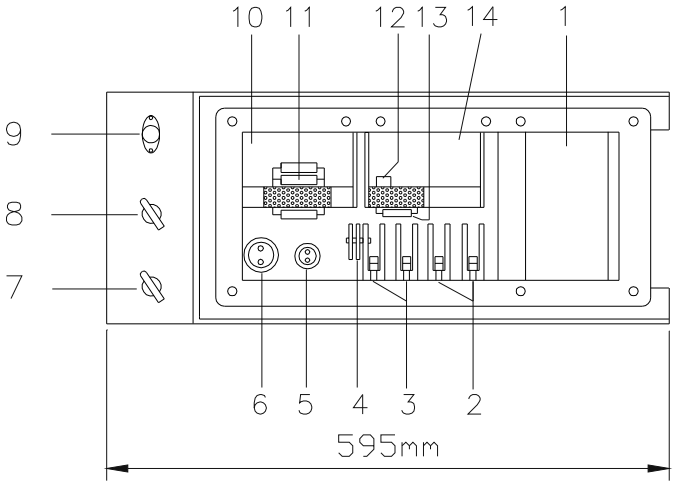


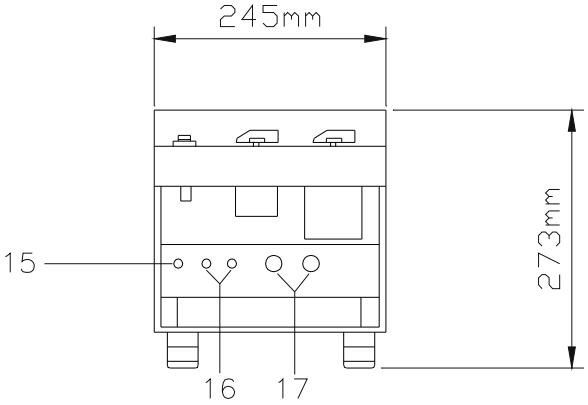
Weight 8 kg

Pos nr.	Navn, type, dimensjon	Materiale	Art.nr
Konstruert/ Tegnet: FH	Godkjent: Initialer / Dato	Målestokk	
Dato 300608		—	NORSElight
Power Supply EX-30 G/1 XS 500 R10		Erstatning for:	Erstattet av:
		D-R10-74	Utgave 1
		Papirformat: A4	Projeksjonsmet.

6500200A

P-X50 (N) C



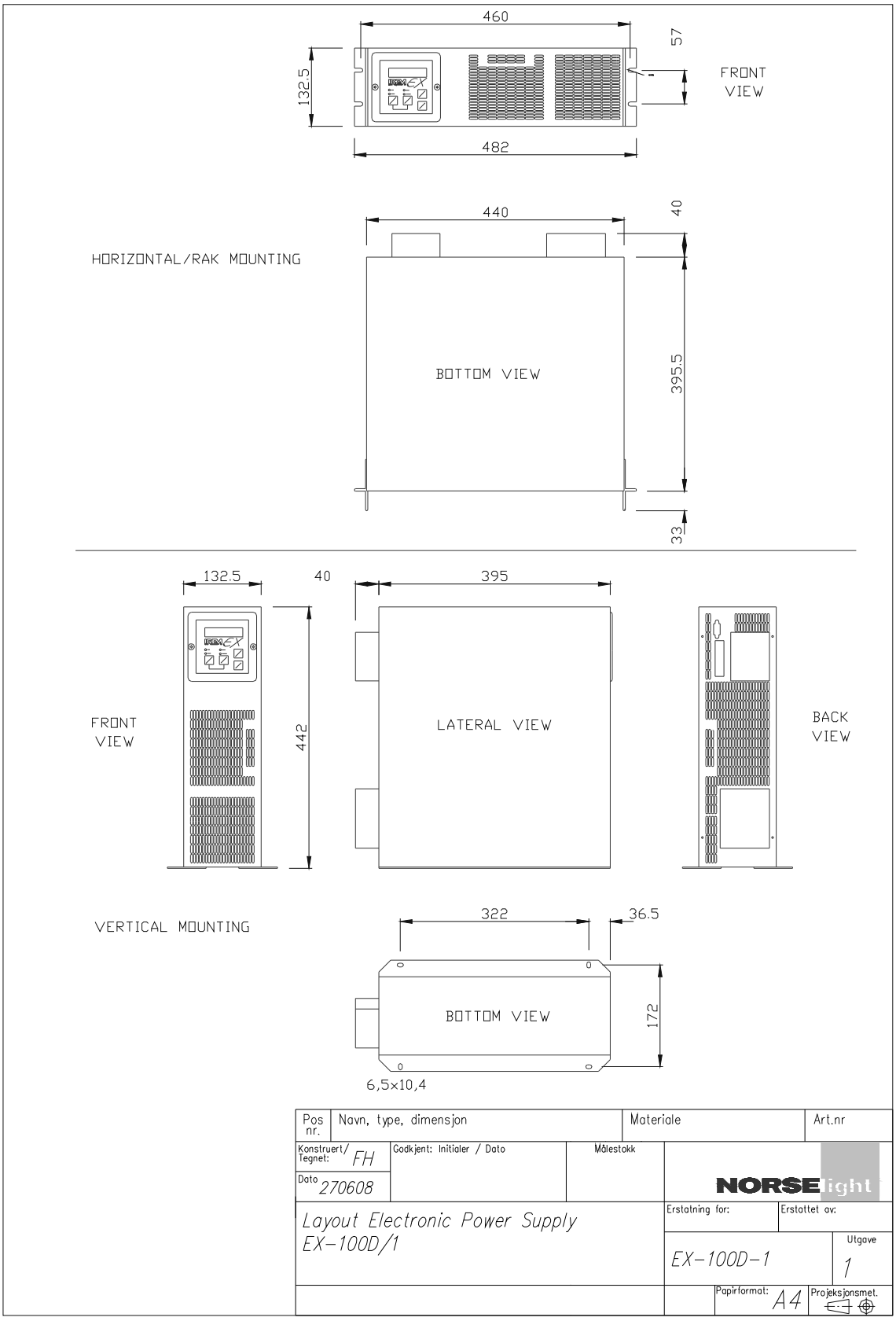


Weight: 63 kg

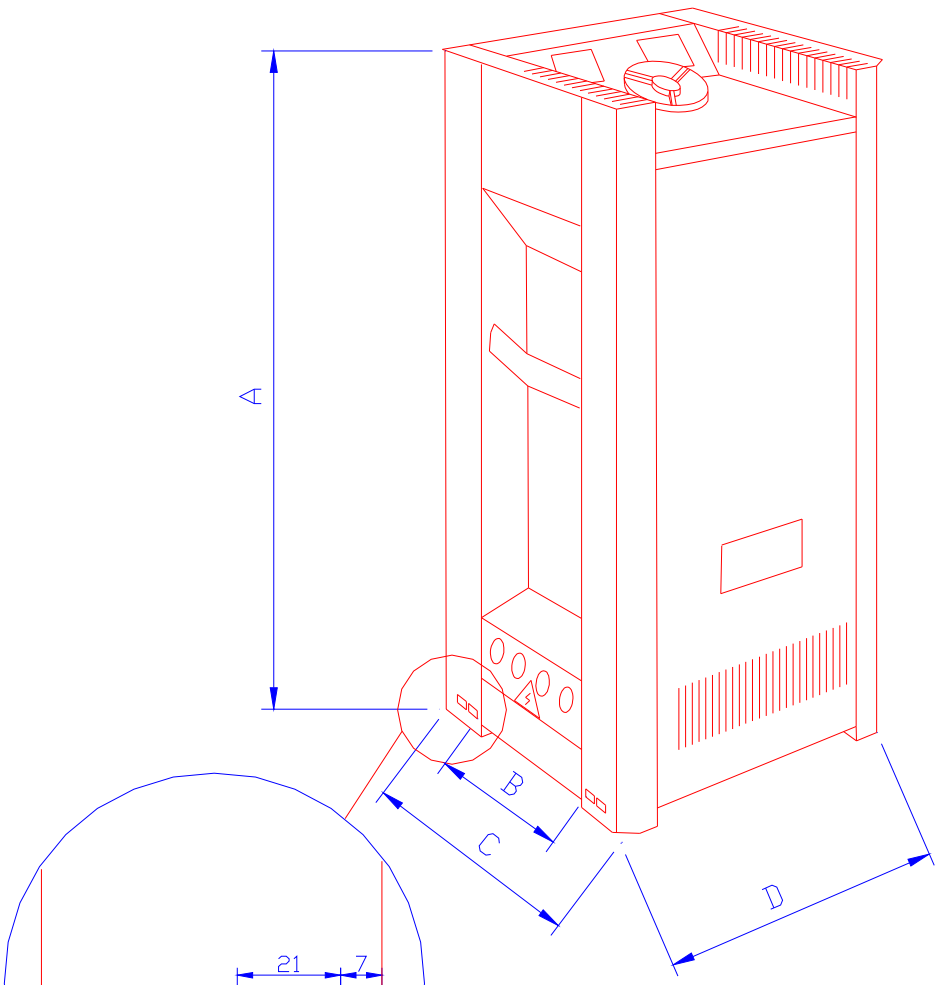
NO.	COMPONENTS
1	Transformer
2	D1–D2 rectifier diodes
3	D4 blocking diode
4	Silicon plate
5	C4 support capacitor
6	C3 filter capacitor
7	Output current adjustment switch
8	ON/OFF and high/low current adjustment switch
9	Fuse holder
10	Filter impedance
11	R4–R5 resistors
12	D3 diode
13	R1 resistor
14	Filter impedance
15	Ground terminal
16	Mo input terminal board
17	MO1 output terminal board

T.M. 039–08	T.M. 022–05	Pos nr.	Navn, type, dimensjon	Materiale	Art.nr
		Konstruert/ Tegnet: AJL	Godkjent: Initialer / Dato	Målestokk 1:10	NORSElight
		Dato 050500			
FH	FH	Power supply P–X50C XS 1000 RS2 / R10 / R50 115 / 230V AC		Erstatning for: D–RS2–45 u2	Erstattet av:
171208	180305			D–RS2–45	Utgave 3
3	2			Papirformat: A4	Projeksjonsmet.

EX-100 D/1


460
57
132.5
FRONT
VIEW
482
HORIZONTAL/RAK MOUNTING
440
40
BOTTOM VIEW
395.5
33
132.5
40
395
FRONT
VIEW
442
LATERAL VIEW
BACK
VIEW
VERTICAL MOUNTING
322
36.5
BOTTOM VIEW
172
6,5x10,4
Pos nr.
Navn, type, dimensjon
Materiale
Art.nr
Konstruert/ Tegnet: FH
Godkjent: Initialer / Dato
Målestokk
Dato 270608
NORSElight
Layout Electronic Power Supply
EX-100D/1
Erstatning for:
Erstattet av:
EX-100D-1
Utgave
1
Papirformat: A4
Projeksjonsmet.

N3-80 / N3-100



	XS 1600	XS 2000	XS 3000
A	840 mm	840 mm	940 mm
B	225 mm	225 mm	285 mm
C	350 mm	350 mm	410 mm
D	410 mm	410 mm	460 mm
Weight/ Vekt	101 kg (N3-80)	101 kg (N3-80)	154 kg (N3-150)

T.M. 050-05 | T.M. 0097-01 | Pos nr. | Navn, type, dimensjon | Materiale | Art.nr

Konstruert/ Tegnet: AJL | Godkjent: Initialer / Dato | Målestokk | NORSElight

Dato 230300

FH | 261005 | 271101 | 3 | A

Power Supply Unit / Strømforsyning
N3-80 / N3-150
XS 1600-2000-3000

Erstatning for: D-RS2-39 uA | Erstattet av:

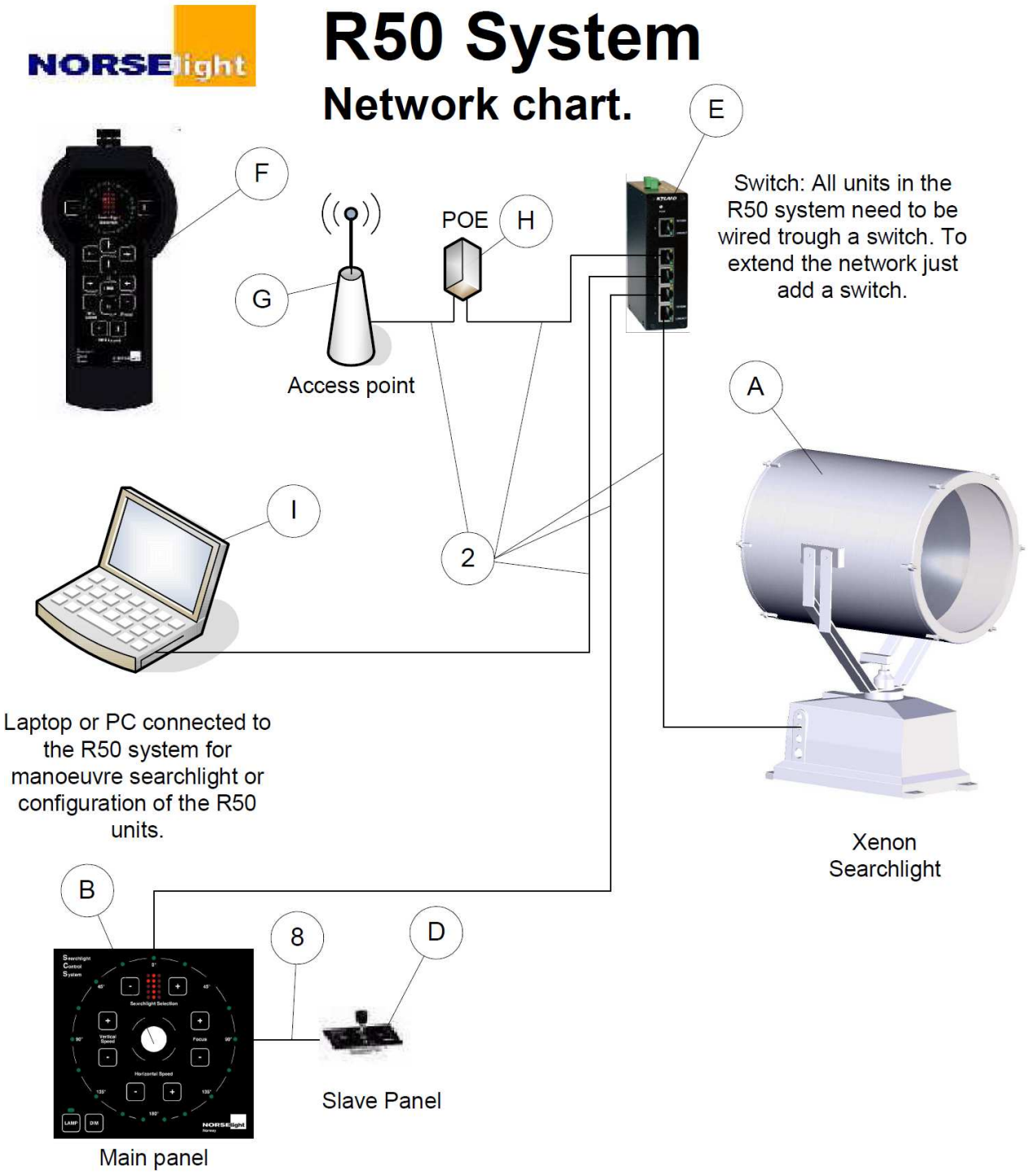
D-RS2-39 | Utgave 3

Papirformat: A4 | Projeksjonsmet.

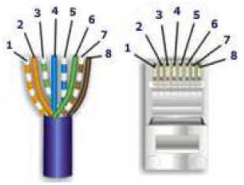
6500200A

6.2 Ethernet BUS

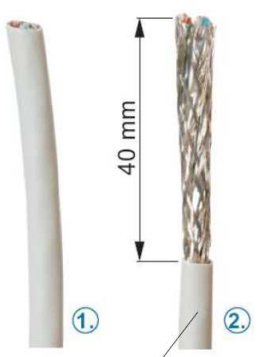
LAN Cables only



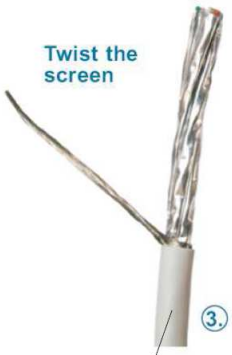
Description:

A	Halogen searchlight	The searchlight only needs mains input and a LAN cable to be ready for operating. Plug and play. The maximum number of searchlights per network is nine.
B	Main Operation Panel - MOP	Main Operation Panel for bulkhead mounting. For example in a bridge console. Needs 24 VDC and a LAN cable to be ready for Operating searchlights connected to the R50 system. Plug and play.
D	Slave Operation Panel	This panel can operate searchlights which are chosen by the Main Panel. There is only possible to manoeuvre horizontally and vertically with the Slave Panel.
E	Switch	Switch with 5 Ethernet LAN outlets. Connect another switch in series with this, to get more LAN outlets. All R50 equipment must be connected to the switch.
F	Wireless Operation Panel -WOP	Press **ON** button to connect to access point. WOP is prepared for Norselight Access point.
G	Access point	Just connect access point to a switch through a Power over Ethernet adapter with a LAN cable. The Access point is powered through a power over Ethernet adapter is delivered with the access point. The LAN cable is the only cable needed for the Access point. Access point is secured with a WEP key. .
H	Power over Ethernet – POE	Power over Ethernet supplies power to the access point, through the LAN cable.
I	Laptop or stationary PC	Connect a PC to the switch and hook up to the R50 system. A laptop or a stationary PC can easily manoeuvre searchlight or do some simple configurations of the R50 units, if there is need for a change. Norselight can supply the necessary programs.
2	LAN Cable – Min required LAN Cat 5e	To achieve the bit rate required by the equipment, the system must be supplied with LAN cables with minimum CAT 5e standard. It is important to use 568 B wiring standard. **568 B** 
8	Multi wire to the Slave Operation Panel	Use a 7 core multi cable and connect the Slave Panel to the Main Panel. There can be connected 2 Slave panels per Main Panel.

How to make a LAN cable

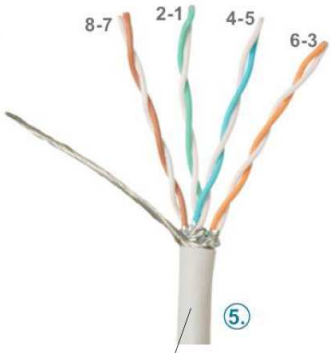


Strip the cable down up to 40 mm (depend on which RJ45 plug you are using).
NOTE! Be carefull with the shield under the insulation.



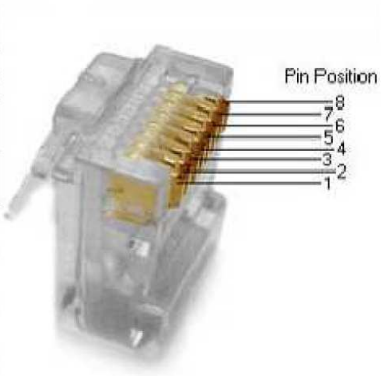
Twist the screen as the picture illustrate.

Remove the plastic shield (if there is) and separate the twisted pairs.



Remove the shield around the twisted pairs and separate the wires. Then you are ready to hook up the RJ 45 plug as the below picture illustrate.

Pin	Color
1	white/orange
2	orange
3	white/green
4	blue
5	white/blue
6	green
7	white/brown
8	brown

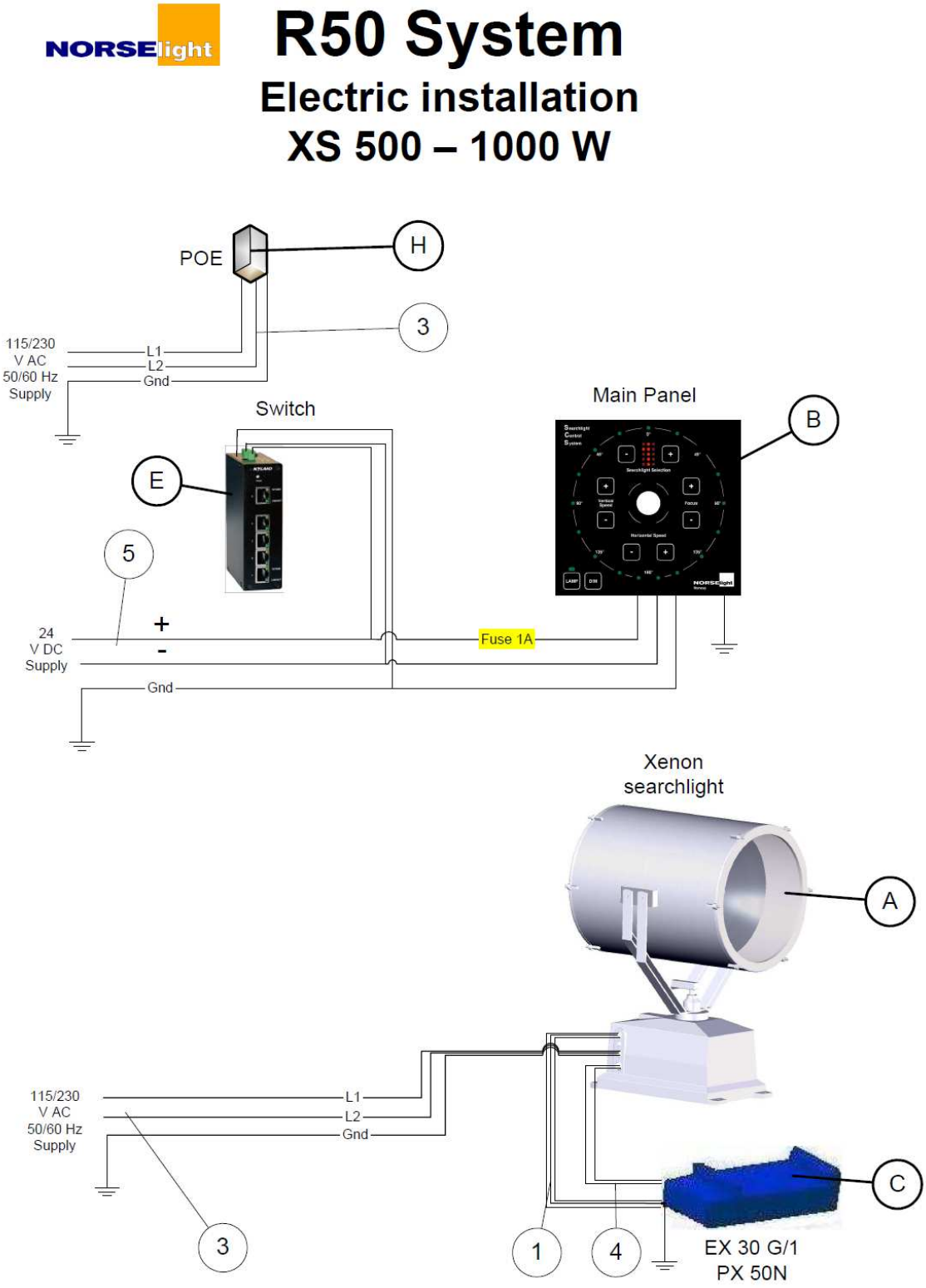


T568B

NOTE! It is very important to connect the shield properly to shield jacket around the RJ 45 plug.

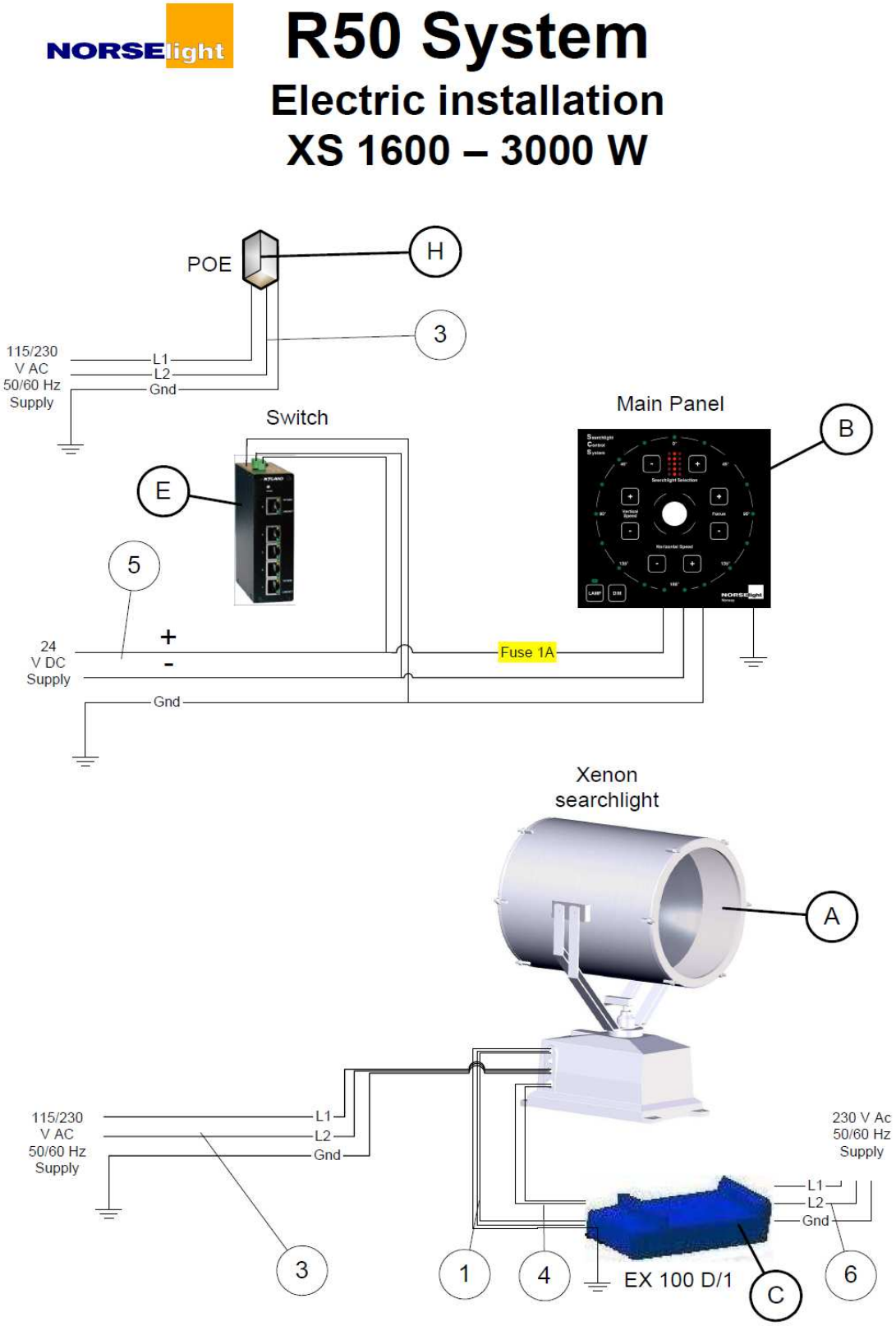
6.3 Electrical

XS 500-1000W.



6500200A

XS 1600-3000W with EX 100 D/1.



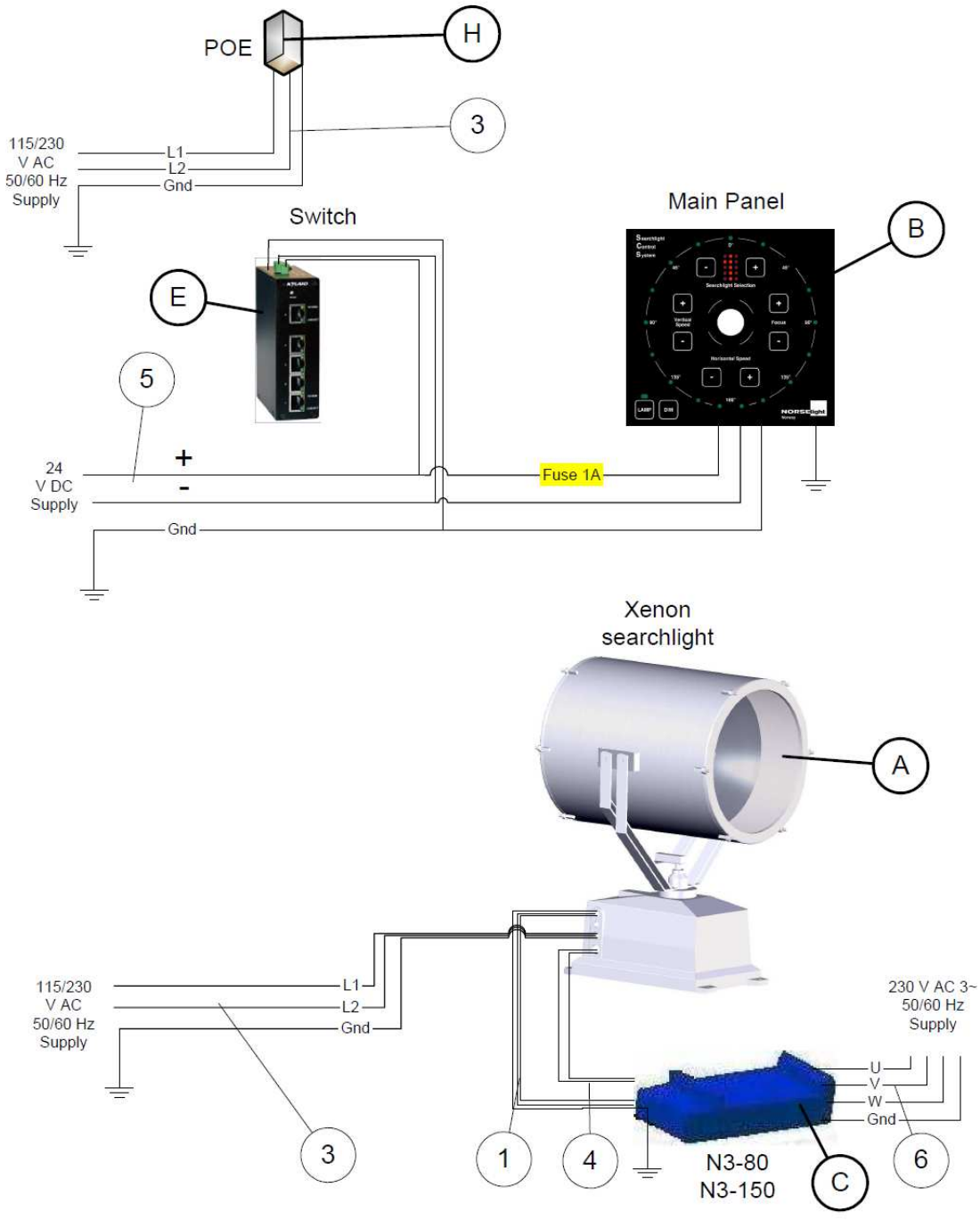
6500200A

XS 1600-3000W with N3 - 80 or N3 - 150.

R50 System

Electric installation

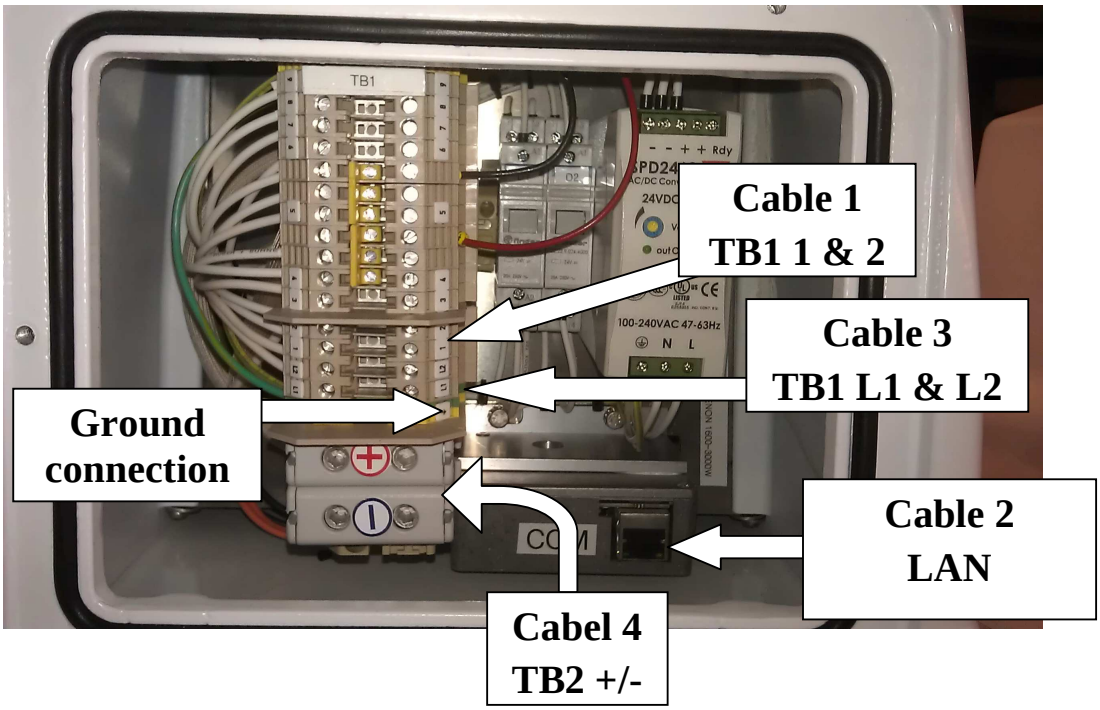
XS 1600 – 3000 W



6500200A

Xenon Cable overview

Cable #	Function	Lamp effect	Number of wires	Flow rate			Connection point	Terminal Dimention Max [mm^2]	Cable entry Max Ø [mm]	Cable Gland entry
				Power W	Current A	Volt V				
1	Power and signal from Searchlight to Rectifier EX 30 G/1	500W	2+Earth	500	4.4 / 2.2	115 / 230	D1 (2&4)	4	7 - 14	M20
	Power and signal from Searchlight to Rectifier PX 50 N	1000W	2+Earth	1000	8.8 / 4.4	115 / 230	D1 (2&4)	4	7 - 14	M20
	Signal from Searchlight to Rectifier EX 100 D/1	1600, 2000 and 3000W	2+Earth	< 2	0.02 / 0.01	N/A	D1 (2&4)	4	7 - 14	M20
2	LAN cable Cat 5a to 7	All type	4 par (8) twisted	N/A	N/A	N/A	Digi connector	RJ45 - T-568B	7 - 14	M20
3	Power to XS500	500W	2+Earth	770	6.6 / 3.31	115 / 230	TB1	4	9 - 18	M25
	Power to XS1000	1000W	2+Earth	1270	11.0 / 5.5	115 / 230	TB1	4	9 - 18	M25
	Power to XS 1600, 2000 & 3000	1600, 2000 and 3000W	2+Earth	279	2.42 / 1.21	115 / 230	TB1	4	9 - 18	M25
4	Xenon Lamp cable	500W	2	500	28.0	18.0	TB2	50	14 - 25	M32
	Xenon Lamp cable	1000W	2	1000	50.0	20.0	TB2	50	14 - 25	M32
	Xenon Lamp cable	1600W	2	1600	65.0	24.0	TB2	50	14 - 25	M32
	Xenon Lamp cable	2000W	2	2000	70.0	28.0	TB2	50	14 - 25	M32
	Xenon Lamp cable	3000W	2	3000	100.0	30.0	TB2	50	14 - 25	M32
5	Power to Main Operation Panel	All type	2x(min) 0,75mm^2	2,16	0,09	24	Terminal plug	1,5	N/A	N/A
	Power to Switch	All type	2x(min) 0,75mm^2	3,5	0,16	24	Terminal plug	1,5	N/A	N/A
6	Power to Rectifier EX 100 D/1	1600W	2+Earth	1600	4.0 / 2.0	115 / 230	Input terminals (R, N plus PE) (X1)	4	N/A	N/A
		2000W		2000	10.0 / 5.0	115 / 230	Input terminals (R, N plus PE) (X1)	4	N/A	N/A
	N3 - 80		3+Earth		5.0	230	U,V,W	10	N/A	N/A
	Power to Rectifier EX 100 D/1	3000W	2+Earth	3000	15.0 / 7.5	115 / 230	Input terminals (R, N plus PE) (X1)	4	N/A	N/A
	N3 - 150		3+Earth		5.0	230	U,V,W	10	N/A	N/A
7	Power to adapter 24VDC	All type	2+Earth	60	5.0 / 2.5	115 / 230	Spring calmp	1,5	N/A	N/A
8	Signal cable to Slave Operation Panel	All type	6x(min) 0,75mm^2	N/A	N/A	N/A	Terminal plug	1,5	N/A	N/A



Junction Box connections

All installation cables enters from the right side looking directly into the Junction Box through 2x M20, M25 and M32 as explained in earlier dimension drawing.

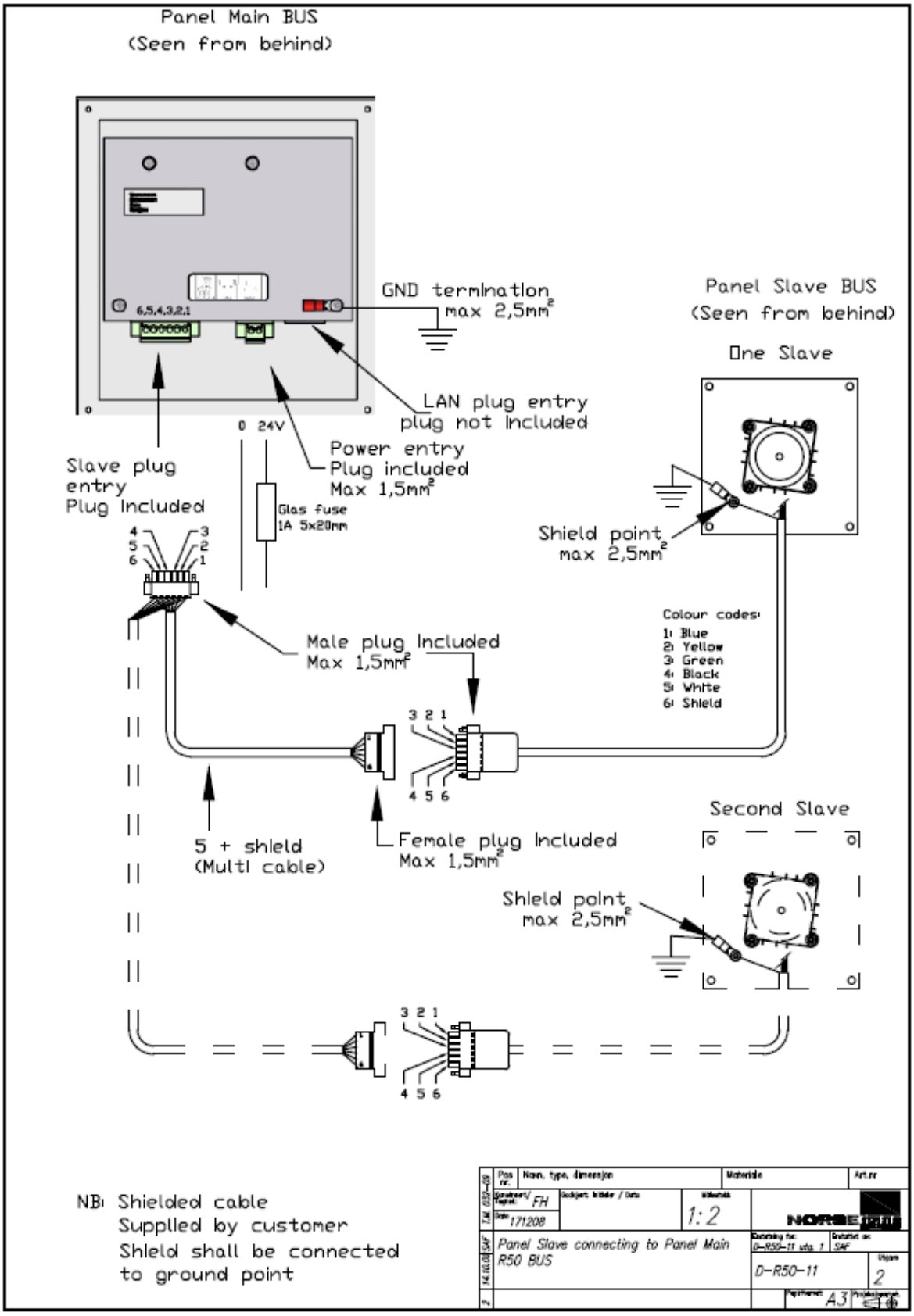
For LAN connection it is recommended to use either WAGO connecting adapter to RJ45 with termination points up to 1.5mm^2 or WAGO connecting plug RJ45.

WAGO connecting adapter, Item no.: 289-175
Product description: INTERFACE MODUL FOR ETHERNET RJ-45 CAGE CLAMP®CONNECTION for DIN 35 rail

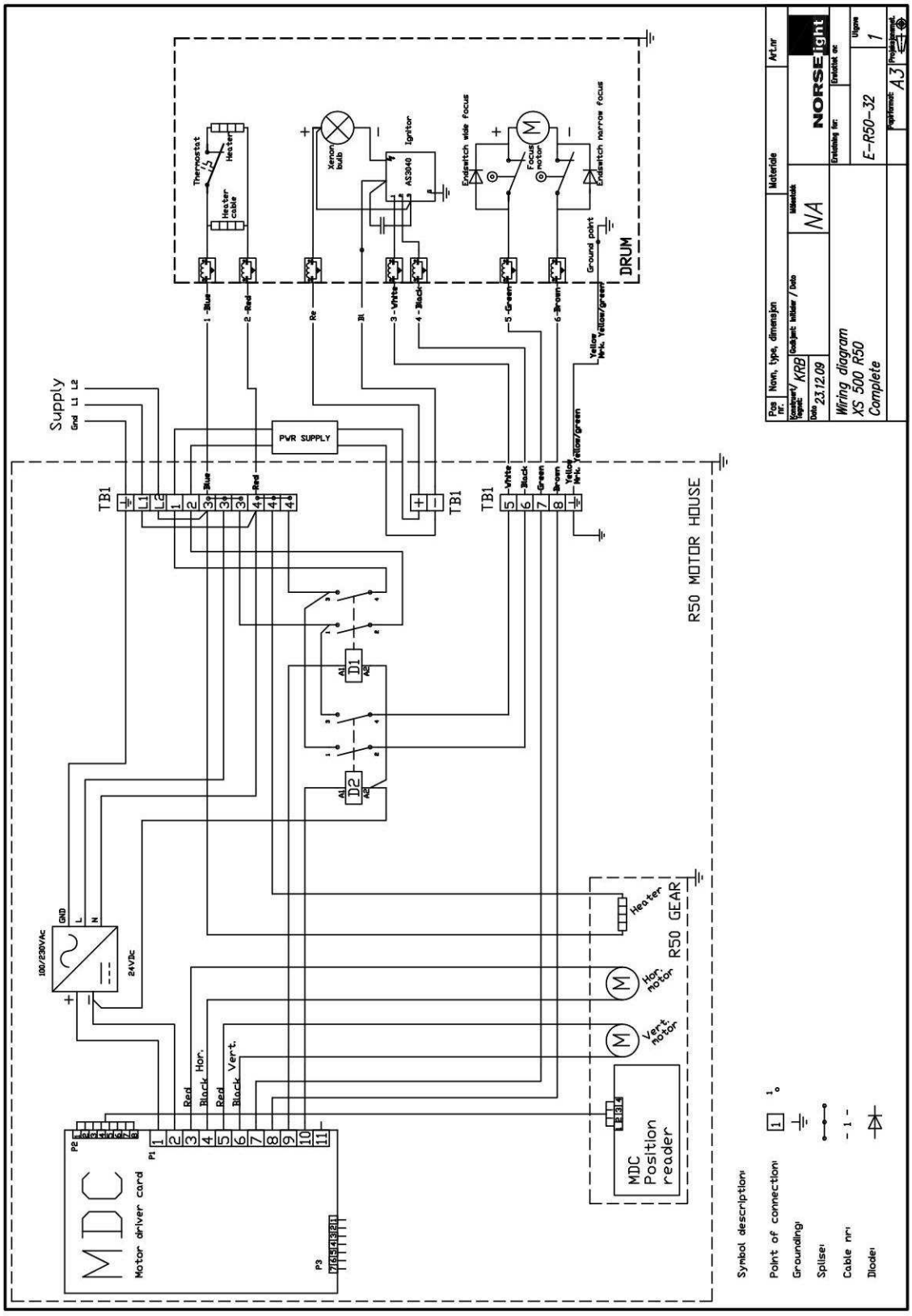
Or

RJ45 connector, Item no.: 1658435 IP20, CAT5e, 4-pos., PROFINET with QUICKON fast connection technology, for 1-wire and 7-wire conductors AWG 26 ... 22, for cable diameter of 4.5 mm ... 8.0 mm, color: gray.

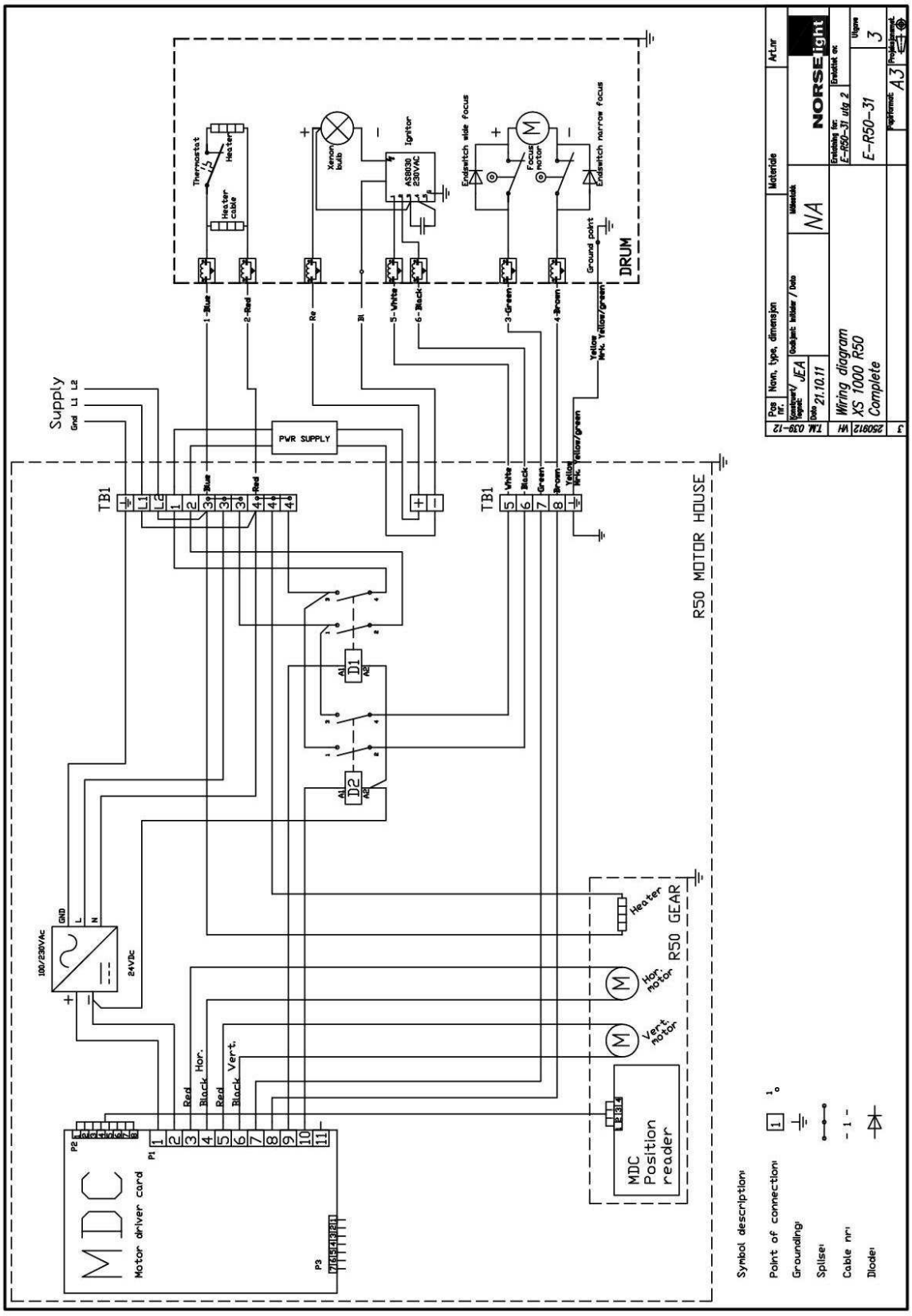
Connecting diagram Main and Slave Operation Panel



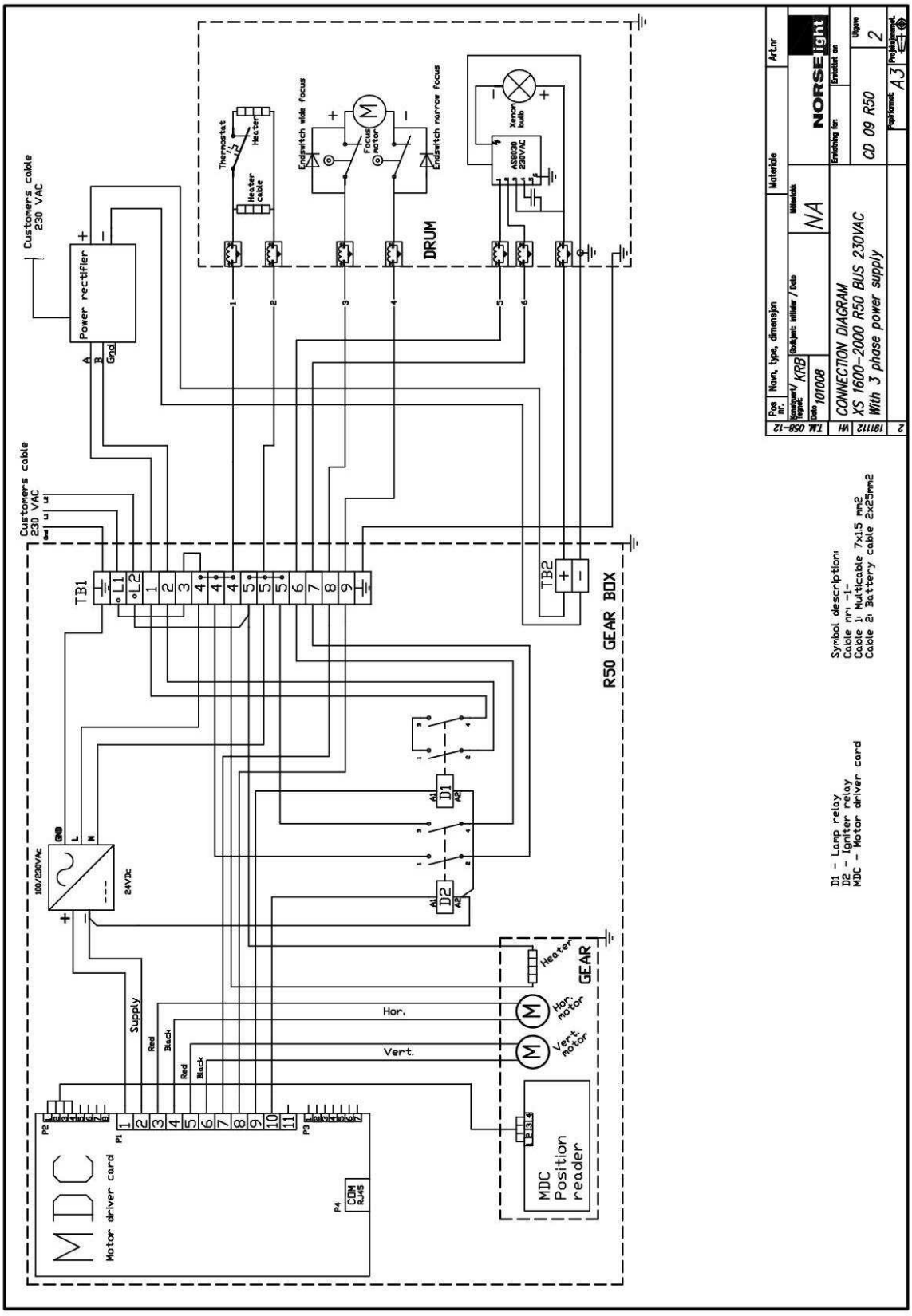
6.4 Internal Wire Diagram



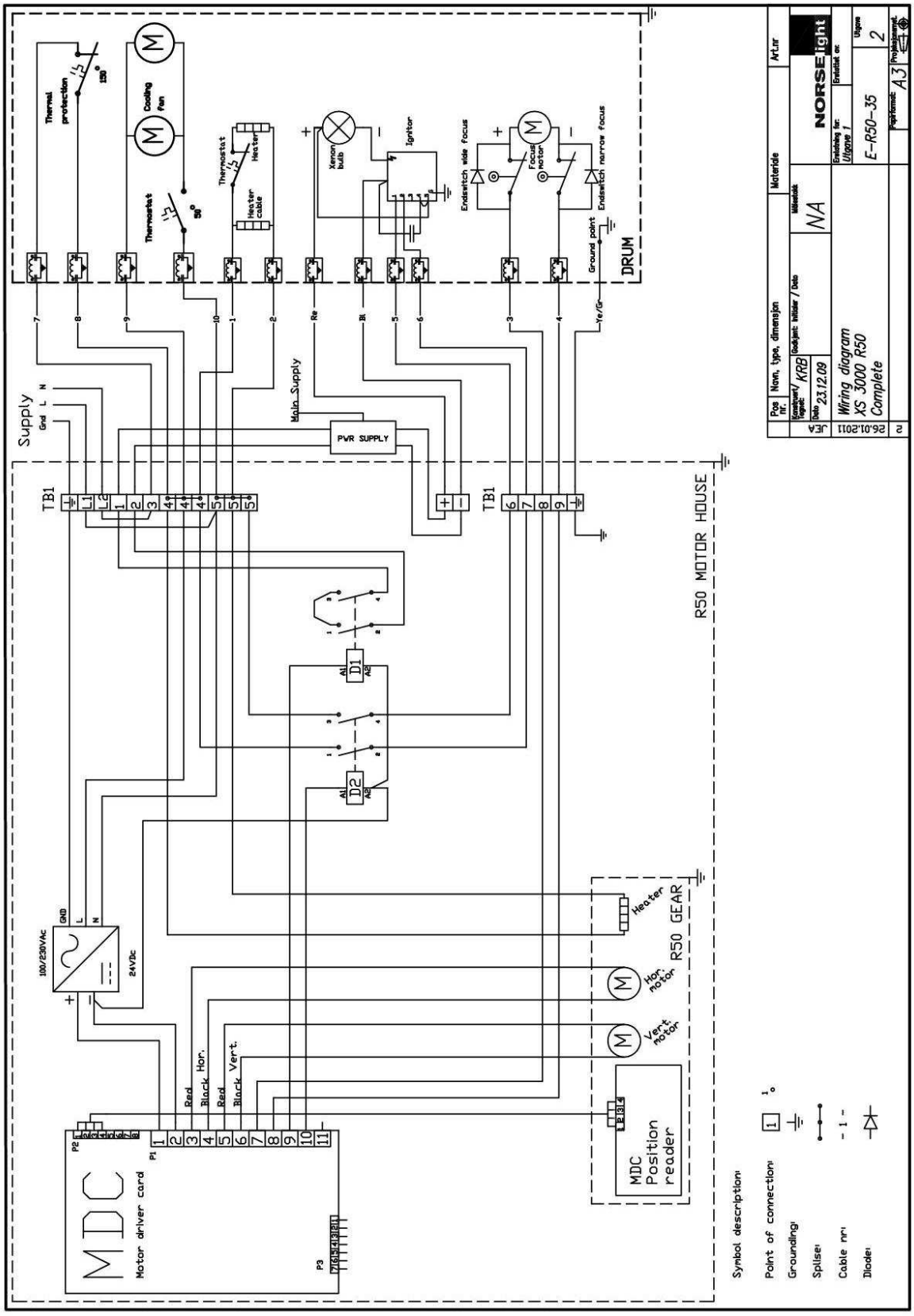
XS 500 R50


DRUM
Thermostat
Heater
Heater cable
Xenon bulb
Ignitor
Endswitch wide focus
Focus motor
Endswitch narrow focus
Ground point
1-Blue
2-Red
Re
Bl
5-White
6-Black
3-Green
4-Brown
Yellow
Yellow/green
Supply
Gnd L1 L2
PWR SUPPLY
TB1
R50 MOTOR HOUSE
White
Black
Green
Brown
D1
D2
100/230VAc
24VDc
GND
L
N
Heater
Hor. motor
Vert. motor
R50 GEAR
MDC
Position reader
Motor driver card
P1
P2
P3
Red
Black
Hor.
Vert.
Symbol description
Point of connection
Grounding
Splise
Cable nr
Diode
Wiring diagram
XS 1000 R50
Complete
E-R50-31
NORSElight
A3

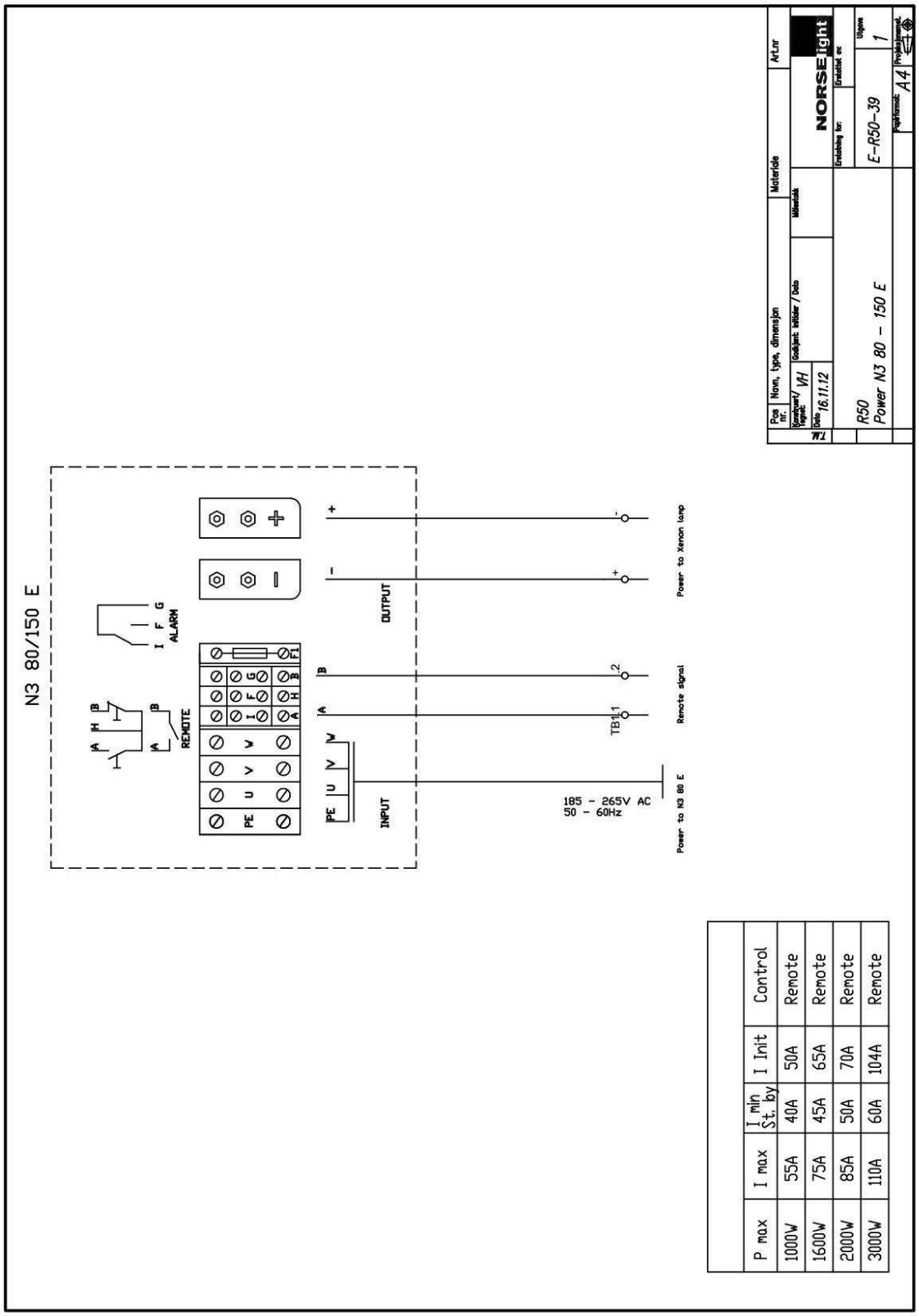
XS 1000 R50



XS 1600 - 2000 R50

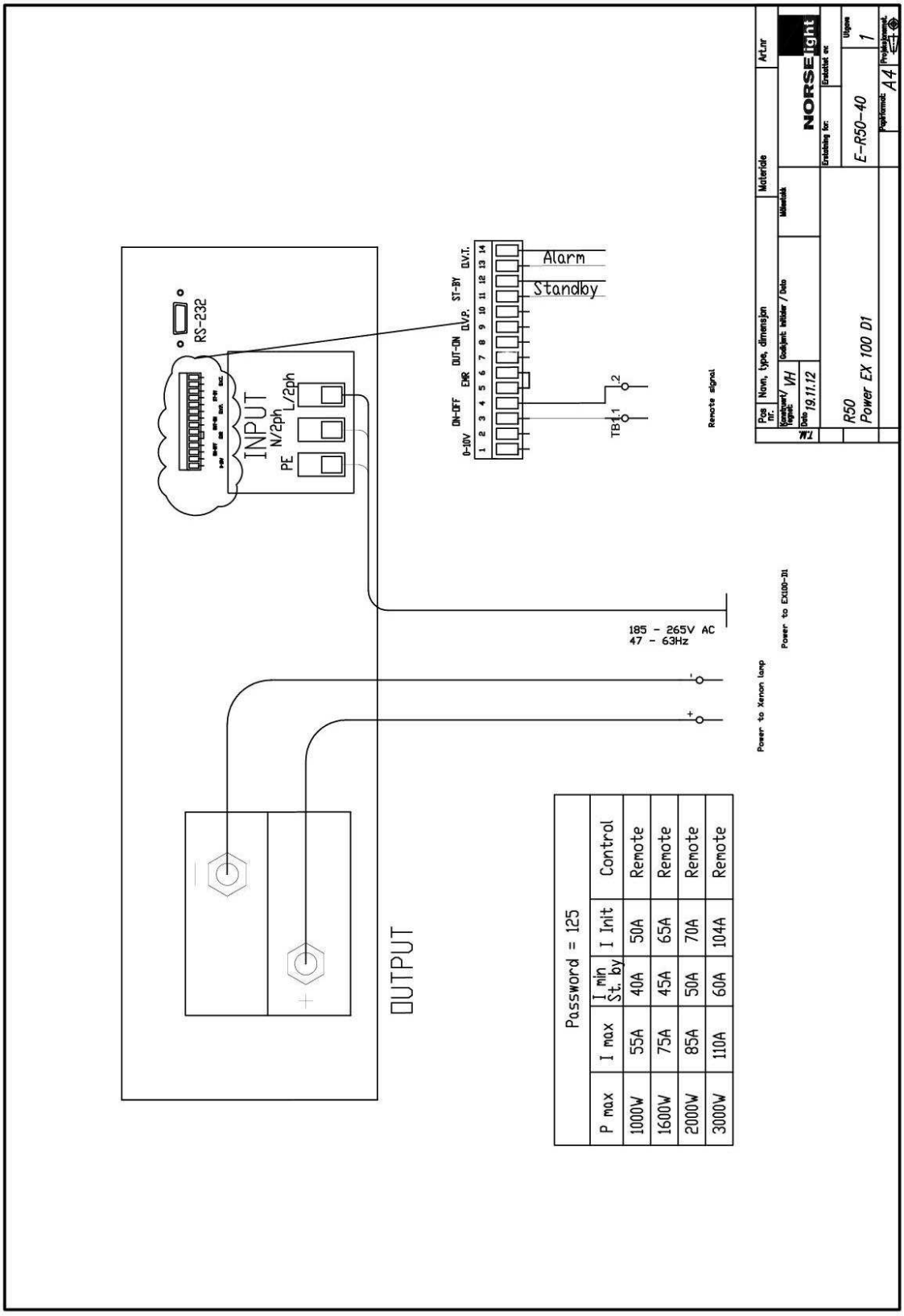

DRUM
Thermal protection
Cooling fan
Thermostat
Heater
Heater cable
Xenon bulb
Ignitor
Endswitch wide focus
Focus motor
Endswitch narrow focus
Ground point
Supply
Gnd L N
Main_Supply
PWR SUPPLY
TB1
R50 MOTOR HOUSE
D1
D2
100/230VAc
24VDc
Heater
Hor. motor
Vert. motor
R50 GEAR
MDC Position reader
MDC
Motor driver card
Red Hor.
Black
Red Vert.
Black
P1
P2
P3
Symbol description:
Point of connection:
Grounding:
Splise:
Cable nr:
Diodes:
NORSElight
Wiring diagram
XS 3000 R50
Complete
E-R50-35
26.01.2011
KRB
23.12.09
NA
A3

XS 3000 R50



P max	I max	I min St. by	I Init	Control
1000W	55A	40A	50A	Remote
1600W	75A	45A	65A	Remote
2000W	85A	50A	70A	Remote
3000W	110A	60A	104A	Remote

N3-80/150 E


RS-232
INPUT
N/2ph
L/2ph
PE
ON-OFF
0-10V
EMR
DUT-DN
DLVP.
ST-BY
DLV.T.
Alarm
Standby
TB1
Remote signal
185 - 265V AC
47 - 63Hz
Power to Xenon lamp
Power to EX100-D1
OUTPUT
Password = 125
P max | I max | I min St. by | I Init | Control
1000W | 55A | 40A | 50A | Remote
1600W | 75A | 45A | 65A | Remote
2000W | 85A | 50A | 70A | Remote
3000W | 110A | 60A | 104A | Remote
R50
Power EX 100 D1
E-R50-40
NORSElight

EX100-D1

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6500200A

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