

CONTROL MODULE LC1PRO: INSTALLATION MANUAL



The LC1PRO is a control module designed to control the lambda sensor Bosch LSU 4.2 or compatible that provides the sensor temperature and other diagnostics parameters over CAN. The lambda signal can be read by using the CAN or analog output.





LC1PRO è un modulo di controllo progettato per controllare il sensore lambda Bosch LSU 4.2 o compatibili che fornisce la temperatura del sensore e altri parametri di diagnostica su CAN. Il segnale lambda può essere letto utilizzando l'uscita CAN o analogica

TECHNICAL SPECIFICATIONS CARATTERISTICHE TECNICHE

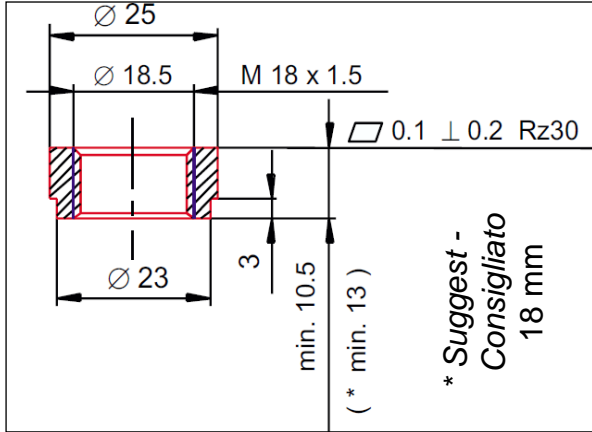
	Compatible sensor type	Bosch LSU 4.2 or compatible
	Lambda value range	GK-LC1PRO-0004 - 6: Analog output 0.7 to 1.3 – CAN output 0.7 to 2.4
		GK-LC1PRO-0005: Analog output 0.7 to 2.3 – CAN output 0.7 to 2.4
	Heater	Internal
	Weight with wire	212g
	Size w/o wire	62x52x19mm
	Box material	Plastic
	Operating temp. range	-15 to 85 °C
	Sealing	100% UR
	Mounting	Plastic tie or Velcro
	Power supply	11 to 16v
	Current (Heating up)	1.88A
	Current	0.7A
	CAN baud rate	1Mbps
CAN refresh rate	100Hz	
Signal ANALOG output	0 to 5v (LINEAR)	

	Sensore Lambda compatibile	Bosch LSU 4.2 o compatibile
	Valore Lambda	GK-LC1PRO-0004: Uscita analogica 0.7 to 1.3 – CAN 0.7 to 2.4
		GK-LC1PRO-0006: Uscita analogica 0.7 to 2.3 – CAN 0.7 to 2.4
	Riscaldatore	Interno
	Peso con cavi	212g
	Misure dispositivo senza cavi	62x52x19mm
	Materiale scatola	Plastico
	Temperatura di esercizio	-15 to 85 °C
	Tenuta all'umidità	100% UR
	Montaggio	Con fascette o Velcro
	Tensione di alimentazione	11 to 16v
	Corrente ass (in riscaldamento)	1.88A
	Corrente assorbita	0.7A
	CAN baud rate	1Mbps
CAN refresh rate	100Hz	
Tens. uscita segnale analogico	0 to 5v (LINEARE)	

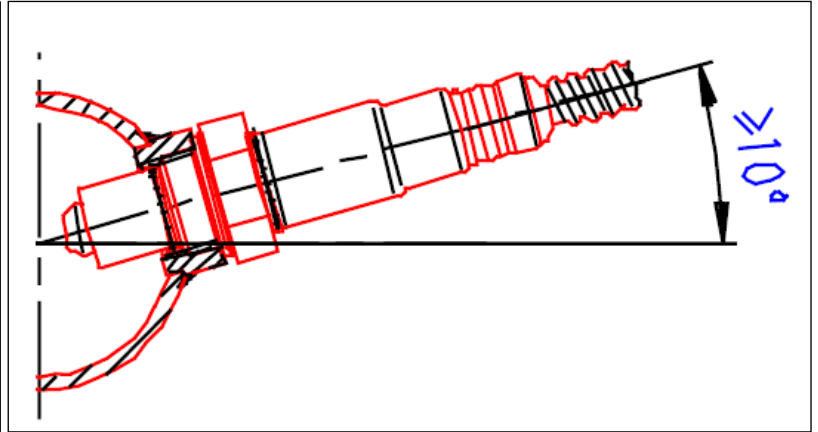
LAMBDA SENSOR INSTALLATION
INSTALLAZIONE SENSORE LAMBDA

	To install correctly the Lambda sensor, follow the instructions described below
	Per installare correttamente il sensore Lambda seguire le istruzioni descritte di seguito

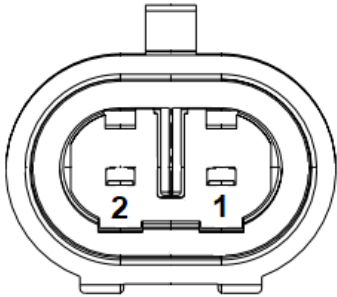


BUSH TO USE – BOCCOLA DA UTILIZZARE

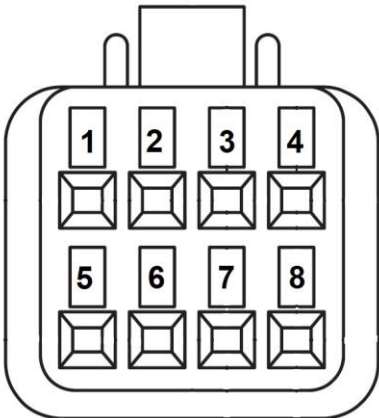




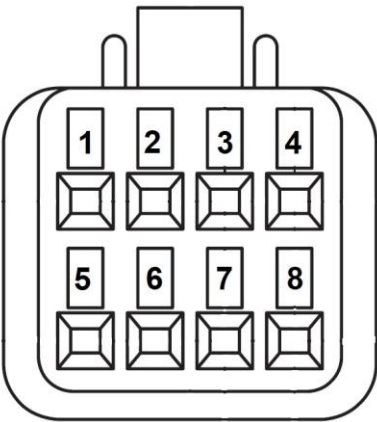


CORRECT POSITION – POSIZIONE CORRETTA





CONNECTORS PINOUT
PIEDINATURA CONNETTORI

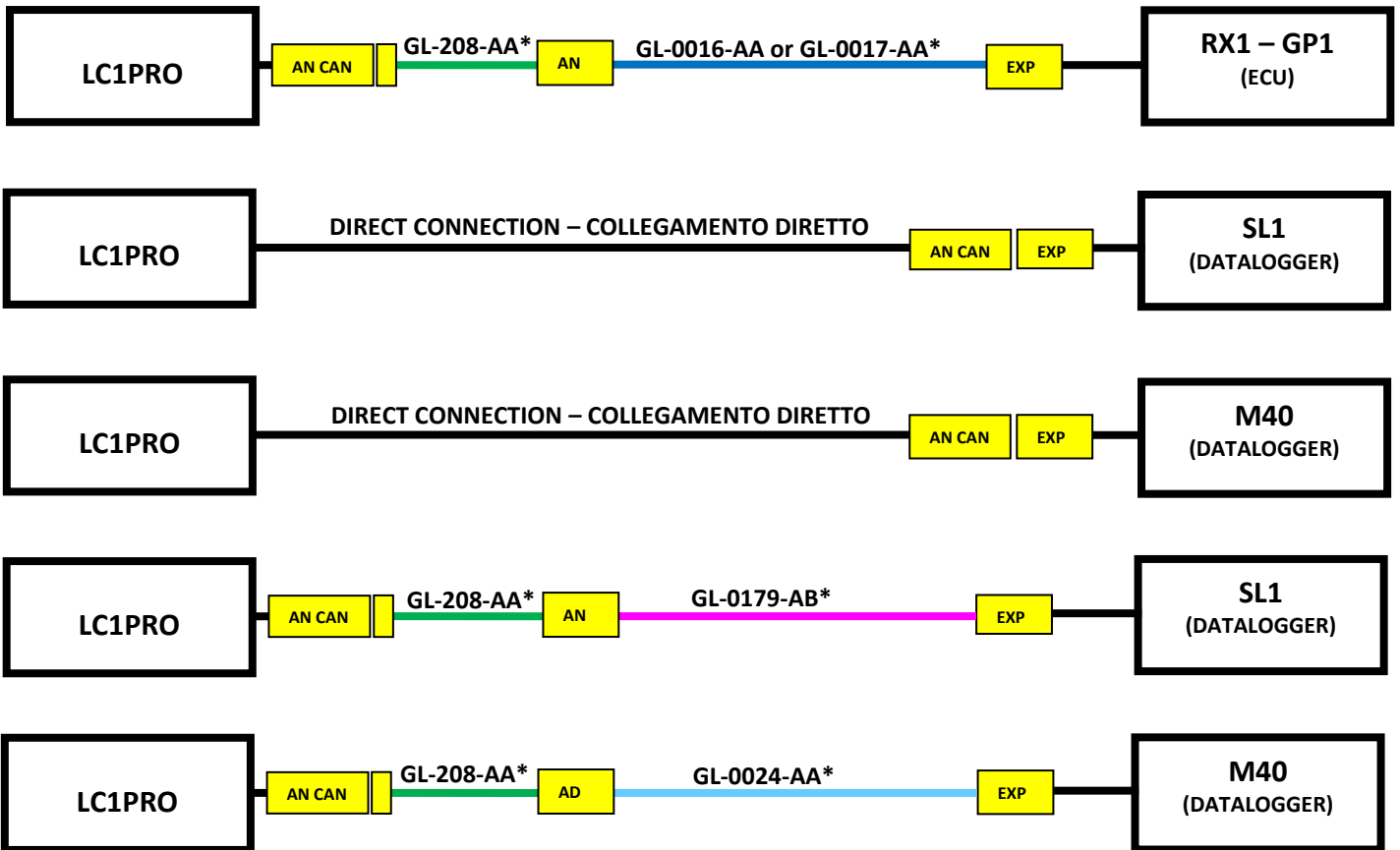
POWER (FRONT VIEW)		AMP 282104-1
		PIN 1: 12 VDC PIN 2: GROND MATING CONNECTOR (AMP 282080-1) PROVIDED WITH WIRES RED WIRE: 12VDC BLACK WIRE: GROUND
		PIN 1: 12 VDC PIN 2: GROND CONNETTORE CONTROPARTE (AMP 282080-1) FORNITO CON CAVI CAVO ROSSO: 12VDC CAVO NERO: MASSA

MAIN (FRONT VIEW)		JST 08R-JWPF-VSLE-D
		PIN 1: N.C. PIN 2: N.C. PIN 3: CANL PIN 4: CANH PIN 5: GND SENSOR PIN 6: RESERVED PIN 7: RESERVED PIN 8: RESERVED (Mating conn. 08T-JWPF-VSLE-D not provided)
		PIN 1: N.C. PIN 2: N.C. PIN 3: CANL PIN 4: CANH PIN 5: GND SENSOR PIN 6: RISERVATO PIN 7: RISERVATO PIN 8: RISERVATO (Mating conn. 08T-JWPF-VSLE-D non fornito)

AN CAN (FRONT VIEW)	JST 08R-JWPF-VSLE-D	
		PIN 1: N.C. PIN 2: GND SENSOR PIN 3: CANL PIN 4: CANH PIN 5: ANALOG SIGNAL PIN 6: N.C PIN 7: N.C PIN 8: N.C (Mating conn. 08T-JWPF-VSLE-D not provided)
		PIN 1: N.C. PIN 2: GND SENSOR PIN 3: CANL PIN 4: CANH PIN 5: SEGNALE ANALOGICO PIN 6: N.C PIN 7: N.C PIN 8: N.C (Mating conn. 08T-JWPF-VSLE-D non fornito)

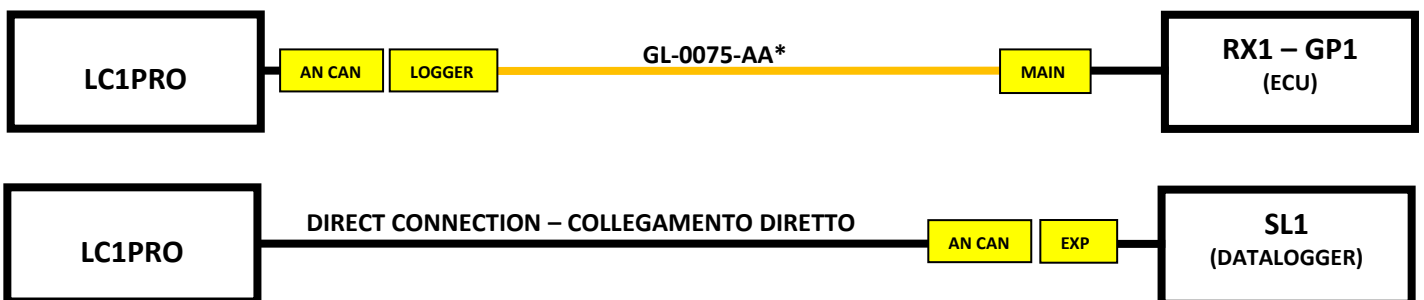
	To connect LC1PRO to other devices by CAN or analog signal, see the PINOUT above; if you have "GET" devices follow the examples below
	Per collegare LC1PRO ad altri dispositivi via CAN o analogico, fare riferimento ai PINOUT sopra riportati; se si dispone di dispositivi "GET" seguire gli esempi sotto

ANALOG SIGNAL CONNECTIONS - COLLEGAMENTO SEGNALE ANALOGICO





*Adapter harness, see Price list on www.athena.eu – Cablaggi adattatori, vedere listino in www.athena.eu





CAN bus CONNECTIONS - COLLEGAMENTO CAN bus



*Adapter harness, see Price list on www.athena.eu – Cablaggi adattatori, vedere listino in www.athena.eu

	<p>The CAN connections are repeated also in the MAIN connector, so is possible connect more LC1PRO in the same system. Contact Athena for this.</p> <p>On MAIN connector is provided a cap with CAN termination "CANT". Remove the cap if there are more than 2 devices terminated in the same bus</p>
	<p>Le connessioni per la CAN sono "ripetute" anche sul connettore "MAIN". Questo permette di collegare più LC1PRO nello stesso sistema. Contattare Athena per questo tipo di esigenza</p> <p>Nel connettore MAIN viene fornito un tappo con terminazione CAN nominato "CANT". Togliere il tappo in caso di più di due dispositivi terminati nella stessa linea</p>

 **SETUP ANALOG SIGNAL and CAN**
 **SETUP ANALOGICO e CAN**

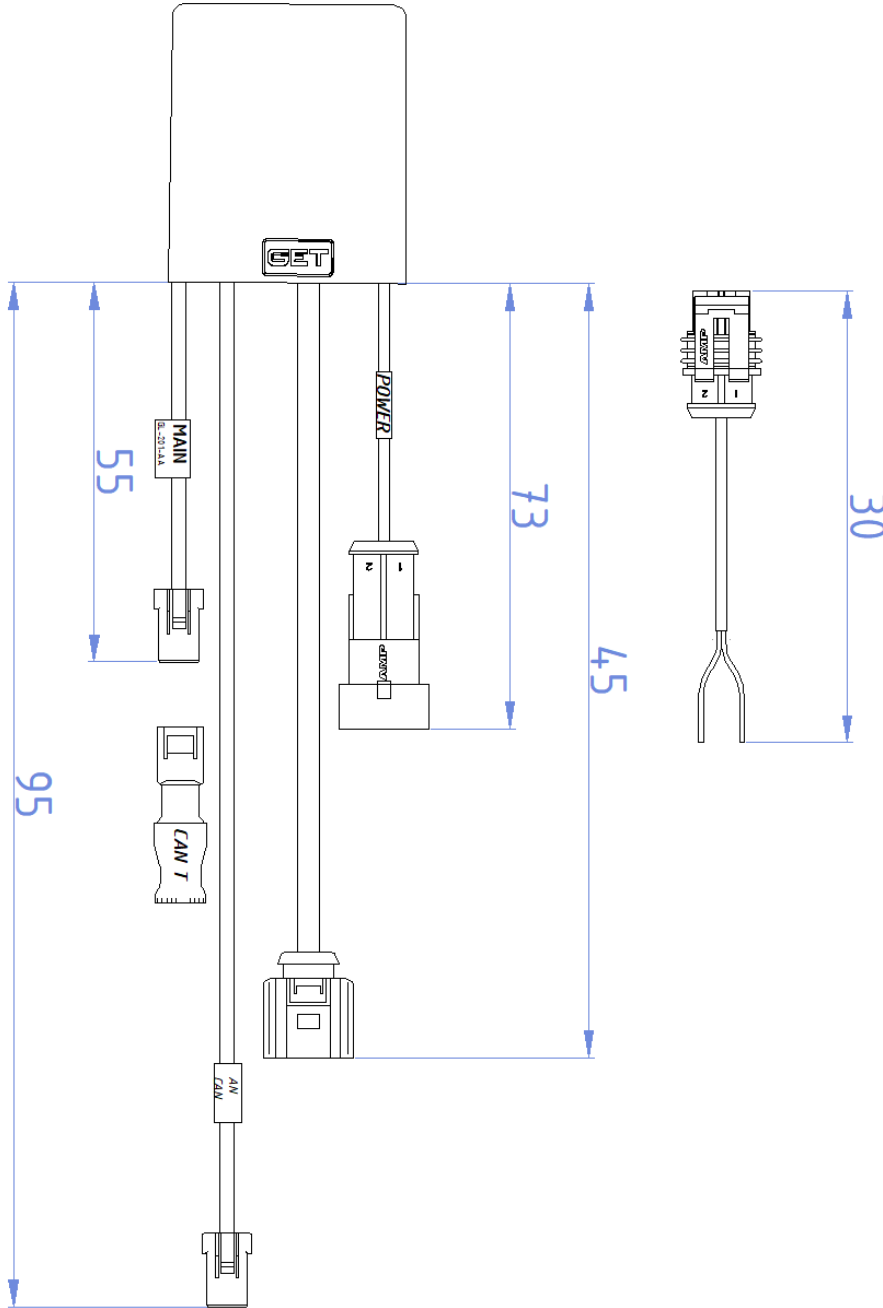
	To use correctly the LC1PRO, setup the logger or ECU as the parameters below. ATTENTION: for GET ECUs, remember to change the  TBLINLAMBDA vector following the analog channel chart below.
	Per utilizzare correttamente il modulo LC1PRO, linearizzare i canali come segue sia per un acquirente che per una ECU. ATTENZIONE: ricordarsi di cambiare la linearizzazione sulle ECU GET nel vettore  TBLINLAMBDA seguendo la tabella per canale analogico sotto riportata.



ANALOG SIGNAL (V)	GK-LC1PRO-0004 GK-LC1PRO-0006		GK-LC1PRO-0005	
	Lambda	AFR	Lambda	AFR
0.5	0.7	10.29	0.7	10.29
2.5	1	14.7	1.5	22.05

CAN ID 0X400						Speed 1Mbps		
START BYTE	START BIT	LENGTH (BIT)	NAME	GAIN	DATA TYPE	UNIT	TX RATE	DESCRIPTION
0	0	16	LAMBDA_F	VALUE/1000	UNSIGNED	STO	100 Hz	Averaged Lambda value
2	16	16	LAMBDA	VALUE/1000	UNSIGNED	STO	100 Hz	Lambda value
4	32	16	LAMBDA_T	VALUE/10	UNSIGNED	C	100 Hz	Probe temperature
6	48	16	LAMBDA_D	1	UNSIGNED	BITMASK (diag. structure)	100 Hz	Diagnostic

LAMBDA_D: diagnostic structure		
BIT	NAME	DESCRIPTION
0	UN_SHORT_TO_GROUND	1 : UN probe pin short to ground
1	IP_SHORT_TO_GROUND	1 : IP probe pin short to ground
2	HEATER_SHORT_TO_GROUND	1 : HEATER short to ground
3	UN_SHORT_TO_BATTERY	1 : UN probe pin short to battery
4	IP_IA_SHORT_TO_BATTERY	1 : IP probe pin short to battery
5	VM_SHORT_TO_BATTERY	1 : VM probe pin short to battery
6	HEATER_SHORT_TO_BATTERY	1 : HEATER short to battery
7	HEATER_OPEN_CIRCUIT	1 : HEATER floating
8-10	RSD	Reserved
11-13	LAMBDA_STATUS	5 : Sensor normal operation
14-15	RSD	Reserved

 **LC1PRO HARNESS DIMENSIONS**
 **INGOMBRO CABLAGGI LC1PRO**



	LC1PRO HARNESS DIMENSION, MEASURE IN MILLIMETERS
	DIMENSIONE CABLAGGI LC1PRO, MISURE ESPRESSE IN MILLIMETRI